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THE BENGAL

PHARMACOPŒIA,

AND

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GENERAL CONSPECTUS OF MEDICINAL PLANTS,

ARRANGED ACCORDING TO THE NATURAL AND THERAPEUTICAL SYSTEMS.

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

EDITED UNDER THE SANCTION OF A MEDICAL COMMITTEE,

BY W. B. O'SHAUGHNESSY, M. D., F. R. S., &c.

BENGAL MEDICAL SERVICE,

Honorary Fellow of the Royal Medico-Botanical Society of London—Corresponding Member of the Provincial Medical Association of England—of the National Institute of Washington, &c. &c.

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Introduction.

THE following pages are intended to supply a guide to the preparation of the remedies usually employed in medical practice in Bengal. The work embraces the few articles for which in this country we are still dependent on importation from Europe, and it includes a considerable number of remedies which, though long used by native practitioners, have not hitherto been formally recognized in pharmaceutical works of this description.

The processes for the preparation of the ordinary forms of tincture, extract, mixture, &c. in which the standard and familiar remedies are used, are taken chiefly from the Edinburgh Pharmacopœia, a few from that of the London or Dublin College.

The preparations of the new articles are given on the data afforded by express experiments.

The work aims at no higher object than affording a useful guide to the native medical student and practitioner, to the subordinate medical establishment of the Army Hospitals, perhaps to the junior medical officers of the Bengal Presidency. To these it will afford some facilities, and under the distressing emergency which not unfrequently occurs in India, of the exhaustion of the supply of a particular article of medical stores, it will enable them, in most

cases, to avail themselves of a good or tolerable substitute from the resources of the bazar.

Thus for *Quinine* and the *Peruvian bark* we have Anarcotine, Gulancha, Rusot, the Kut-kulega nut, &c.; for *Jalap*, the Kaladana; for *Belladonna* the preparations of Stramonium and Daturia. The "Surmeh" supplies the ready means of preparing *Tartar Emetic.* In the Koochila bark and its salt, we have a substitute for *Strychnine.* *Colchicum* finds a fair representative in the Hermodactyl; *Ipecacuanha* in Mudar and the Kanoor. For *Sarsaparilla*, the Ununtamul is as good a substitute as could be desired. For all the metallic preparations, with a very few and unimportant exceptions, the bazar ores and minerals yield the materials which, used as we point out, will afford the local Apothecary, even though of limited skill, an ample and cheap supply of all the articles of this class absolutely necessary for Hospital use.

The few substitutes we have thus enumerated, represent the remedies which constitute the habitual resources of the practitioner, and with which, were all the rest of the Materia medica beyond his reach, he might still undertake his Hospital duties, if not with full confidence, at least without despair as to the means at his disposal.

In the description of the articles and processes, we have adhered as much as possible to a familiar or English nomenclature. We have very seldom introduced Latin synonyms, and usually done so only when the Latin and English word differed very materially in pronunciation. In this our object is to effect the gradual disuse of a Latin formulary in our Native Hospitals.

It was the intention of the Committee to have inserted a copious table of synonyms in the chief Eastern languages and in the native character, and for this purpose, tables were accordingly prepared, under the superintendence of the Editor by native assistants, who were deemed competent for the task. But careful examination led to such doubts of the accuracy of several of the names, that it is deemed preferable to omit the entire.

It seems desirable to explain, that the copious tables of the remedies found in the natural families of plants, and of remedies arranged according to their medicinal effects, prefixed to the Pharmacopœia properly so called, constitute an unusual, but it is confidently hoped not a useless addition to such a work, in our language. In several of the best European Pharmacopœiæ an alphabetical catalogue equally voluminous is first given, in which are inserted the names of nearly every plant of reputed medicinal value. In our work, we first give a Conspectus of medicinal plants in the natural Botanical system, and then in the Therapeutical arrangement. The object sought to be accomplished by these tables is to facilitate research for new remedies in India, where a vast and rich field is open to the careful experimentalist. To illustrate the use of the tables, we may suppose a practitioner, having that knowledge of the natural families of plants which the Medical College of Calcutta affords to its graduates, to be desirous of ascertaining the actual medicinal value of the plants in his district. In the first table he will find at a glance what genera or species of a given family have in other countries been found to possess particular virtues as cathar-

tics, emetics, diuretics, &c. The table further informs him what species are already known to exist in a particular locality in India, and what is supposed to be their therapeutical utility. With this clue to guide him, his researches become comparatively free from difficulty. Or again, if we suppose him desirous on a particular occasion, on his stores being exhausted of a special purgative, diuretic, &c. to obtain a local substitute, he consults the second table, and under the section—Purgative, Diuretic, &c. he finds all the plants inserted which are known, or strongly believed, to possess this particular property; and he also discovers the locality they occur in, and the degree of probability of their affording him the object he requires.

To those who are not inclined to pursue experiment, or to increase the existing catalogue of medicinal agents and resources, these tables will doubtless seem a needless expenditure of space and labour. But to the few who institute such researches, they will prove of value and assistance, and it is for such alone they have been arranged.

As in the preceding volume, the Editor has the pleasing duty to discharge, of returning his grateful thanks to his friend Dr. Wallich for the pains he has bestowed on this work, especially on the "Conspectus of Medicinal Plants" arranged according to the natural families; to Mr. Nicolson and Dr. Cameron, the Editor also ventures to offer his cordial acknowledgments for the kindness with which, in per-

formance of their functions as the only members of the Pharmacopœia Committee remaining at the Presidency, they lent their aid and sanction to his humble efforts to add to the resources of the medical practitioner in Bengal.

It becomes necessary to add, that the printing of this volume, already far advanced in October 1841, was interrupted by the Editor being compelled to go to Europe on sick furlough. It was resumed on his return to India this year, but under circumstances which deprived him of the facilities he formerly enjoyed for pharmaceutical and clinical experiment. He was thus prevented from testing during the completion of this volume many substances of considerable reputation among native physicians, and which have been, accordingly and unavoidably, reserved for future researches.

Calcutta, December, 1844.

ERRATA.

Page 208 *for* LECHEN ISLANDICUM, *read* ICHEN, &c.

,, 286 *for* distil off the spirit one-fourth, *read* TO one-fourth.

,, 288 In the formula for preparing the "Acetic extracts" of *Colchicum* and of the *Hermodactyl*, it should be directed also to strain the bruised bulbs through calico, and evaporate the strained liquor.

,, 298 Infusion of Buchu *or Uva Ursi*, expunge *or Uva Ursi*.

,, 382 *for Creosote*, read *Creasote*.

,, 426 *for* Compound *mixture* of Gentian, *read* Tincture, &c.

,, 436 for *Hermodetyl* read *Hermodactyl*.

THE

BENGAL PHARMACOPŒIA.

WEIGHTS AND MEASURES.

To ensure perfect uniformity in the preparation and doses of medicines, and at the same time to provide a standard universally and easily obtainable, we have adopted as the basis of our system, both of weights and measures, *the Honorable East-India Company's New Rupee.*

By numerous experiments it has been ascertained that the new Rupee, or tola, as found in circulation, is exactly equal to English Pharmaceutical grains ... } 180

The ½ rupee and ¼ rupee (silver) of the new currency are equal to 90 and 45 grains each.

The new copper pice is equal to 100 grains.

The ¼ rupee (silver) we divide into 45 equal parts, each termed one grain.

This is readily done by taking an equal weight of wire, and cutting it into three equal lengths; each length is further subdivided three times, whereby five grain weights are obtained; each five grain wire divided into five equal parts, gives the units required.

Of these units or grains, (gr.)

		English Pharmacopœia wts.
20	are equal to one scruple	℈
60	,, one drachm	ʒi
480	,, one ounce	℥i

Twelve English Pharmacopœia or Troy ounces make one pound, (℔ i.)

The Avoirdupois pound is divided into 16 ounces (each 437·5 grains) each ounce into 16 drachms—each drachm is 27·34 grains.

	Grains.
1 Troy pound contains	5760
1 Avoirdupois pound.....	7000

In wholesale purchases, or sales of drugs, for example in large consignments imported from Europe, the avoirdupois pound is employed.

The measure of liquids we employ is derived from the rupee, but is equal to the legal standard of Great Britain.

A column of liquid of a base equal to the silver quarter rupee, and in length equal to $3\frac{5}{4}$ inches, measures exactly—

1 Pharmaceutical fluid ounce ... f℥i
20 Fluid ounces, are one pint ... Oi
8 Pints, are one gallon Ci

For measures of liquids less than the fluid ounce, we take a column of liquid having a circular base equal in diameter to the semidiameter of the $\frac{1}{4}$ rupee, and in length equal to one inch and eight-tenths, which measure is one fluid drachm, or sixty minims; of these fluid drachms there are eight in one ounce.

A fluid drachm of pure water at 76° Fahr. weighs fifty-eight troy grains.

The minim, is expressed by the mark ♏.

As liquids expand and contract by changes of temperature and atmospheric pressure, the bulks of the preceding measures are estimated at the standard of 62° of Fahrenheit's thermometer and 30° barometer. All measuring vessels should be graduated at such seasons as permit these circumstances to be observed.

The cubical inch of distilled water at this temperature weighs 252·458 grs.

The diameter of the new rupee is 1·20 English inch, or if divided into 12 equal parts, each is $\frac{1}{10}$ of an inch.

The diameter of the silver quarter rupee is $\frac{1}{3}$ of an inch.

The diameter of the new copper pice is precisely an English inch.

The preceding measures are best made of glass, silver, or pure tin. A uniform tube of the necessary dimensions is easily prepared by hammering the silver or tin round an iron rod of the required size. The tube should be soldered on the outside, and closed below by a perfectly flat piece also soldered from the outside.

For the construction of weights, we recommend silver or pure tin, beat out into uniform thin plates; brass or copper rusts rapidly, and weights made of these metals soon become deceptive. A set of weights should comprise the rupee or tola, half and quarter rupee, a drachm, a half drachm, a scruple, a half scruple, and a series of small weights from six grains to half a grain. The pharmaceutical character, and the number, should be stamped on each weight.

For quantities above the tola weight, it is sufficient to recollect that the Troy pound contains 96 drachms, equal to 32 of the Company's new rupees.

Table I.

Conspectus of Medicinal Plants, arranged in the Natural System.

The Linnæan classes and orders are given to each genus. * Signifies that the article is cultivated in the Calcutta Botanical Garden. B. D. refers to a fuller description in the Bengal Dispensatory.

NAT. ORDER I.—RANUNCULACEÆ.

			B. D. *Page.*
Tribe 1—Clematideæ.			
Clematis Gouriana.* *Polyand. Polygyn.*	acrid and poisonous,	Ruins of Gour, Bengal,	160
——— Vitalba.	do. do.	France,	160
——— sinensis.	diuretic and diaphoretic,	Cochin China,	160
——— mauritiana.	blister for tooth ache,	Mauritius,	160
Tribe 2—Anemoneæ.			
Anemone Pulsatilla. *Polyand. Polygyn.*	acrid and corrosive,	Europe,	160
——— nemorosa. *Polyand. Polygyn.*	do. do.	Do.	160
——— cernua. *Polyand. Polygyn.*	tonic bitter,	China,	160
Thalictrum foliolosum.* *Polyand. Polygyn.*	tonic aperient,	Mussoorie, Kunawur, and Cashmere,	161
Knowltonia vesicatoria.	blister,	Cape of Good Hope,	161
Hydrastis canadensis.	bitter tonic and yellow dye,	Canada,	161
Tribe 3—Ranunculeæ.			
Ranunculus sceleratus. *Polyand. Polygyn.*	blister,	Northern India,	162
——— acris.	vesicating and acrid,	Do. do.	162
——— bulbosus.	do. do.	Do. do.	162
Tribe 4—Helleboreæ.			
Coptis Teeta. *Polyand. Polygyn.*	bitter tonic,	Upper Assam,	163
—— trifolia.	do. do.	North America,	163

			B. D.	Page.
Nigella sativa.* *Polyand. Polygyn.*	..	tonic condiment, ...	S. Europe, Egypt, Barbary, Caucasus, and India, ...	164
Aconitum ferox. *Polyand. Polygyn.*	..	formidable narcotic poison, ..	Himalayan Mountains, Sirmoor, Kemaon, and Nipal, ...	165
——— Napellus.	..	energetic acrid narcotic, ..	Europe, ...	166
——— heterophyllum.		tonic, ...	Mountains of Choor, Shalma, and Kedarnath, ...	167
Helleborus niger. *Polyand. Polygyn.* ..	..	powerful cathartic, ...	Nipal and shores of the Red Sea, ..	168
——— fœtidus.	..	popular purgative, ...	England, ...	169
Delphinium Staphisagria. *Polyand. Polygyn.*		cathartic and emetic, ..	Levant, Teneriffe, and Asia Minor, ..	169
——— Ajacis.*	..	properties doubtless the same,	India, ...	169
TRIBE 5—PÆONIACEÆ.				
Pæonia officinalis. *Polyand. Digyn.* ..	..	emetic and cathartic; root supposed to be antispasmodic, ..	South of Europe, ...	169
——— Emodi.	..	.. ..	Shalma Mountain, Kemaon, ...	170
Actea spicata. *Polyand. Monogyn.* ..	..	acrid and poisonous, ...	Caucasus and Siberia, ...	170
—— acuminata.	..	.. ..	Himalayas, ...	170
Xanthorrhiza apiifolia. *Polyand. Polygyn.* ..		tonic, ...	United States, ...	170

NAT. ORDER II.—PODOPHYLLEÆ.

Podophyllum peltatum. *Polyand. Monogyn.* ..	powerful cathartic, ...	United States, ...	170
——— Emodi.	.. .. probably the same, ...	Nipal, Kemaon, Choor mountain, Himalayas, ...	170
——— hexandrum.		Kedarkanta Mountain, ...	170

NAT. ORDER III.—PAPAVERACEÆ.

			B.	D.	Page.
Papaver Rhoeas. *Polyand. Monogyn.*	red colour for a syrup,	Upper India,			171
—— somniferum.*	yields opium,	South of Europe, Asia Minor & India,			171
Chelidonium majus. *Polyand. Monogyn.*	violent acrid poison,	Europe,			183
Argemone mexicana.* *Polyand. Monogyn.*		Hindustan,			183
Sanguinaria canadensis. *Polyand. Monogyn.*	powerful emetic and purgative,	United States and Canada,			184
Meconopsis aculeata. *Polyand. Monogyn.*	said to be a powerful narcotic,	Nepal, Choor, Kedarkanta, Peer Punjal,			184

NAT. ORDER IV.—FUMARIACEÆ.

Corydalis cashmeriana. *Diadelphia Hexand.*		Choor Mountains,			185
—— Govaniana.	external application to indolent tumors,	Europe,			185
—— tuberosa.	do. do.	Do.			185
—— fabacea.					

NAT. ORDER V.—CRUCIFERÆ.

Tribe 1—Arabideæ.

Nasturtium officinale.* *Tetradynamia Siliquosæ.*	gently stimulant and diuretic,	Europe,			186
Cheiranthus Cheiri.* *Tetradynamia Siliquosæ.*	aromatic, stimulant,	Upper India,			186

Tribe 2—Alyssineæ.

Cochlearia Armoracia.* *Tetradynamia Siliquosæ.*	stimulant, diaphoretic, emetic and externally rubefacient,	Europe,			187

			B. D.	Page.
Cochlearia officinalis. *Tetrad. Siliculosæ.*	scurvy grass, stimulant & nutritious,	Europe, ...		187
Tribe 3—Sisymbreæ.				
Several species are officinal in various countries on account of their possessing properties resembling those of the scurvy grass, ...				187
Erysimum perfoliatum. *Tetrad. Siliquosæ.*	cultivated for its oily seeds, ...	Japan, ...		187
Tribe 4—Lepidineæ.				
Lepidium sativum. *Tetrad. Siliquosæ.* ..	gentle stimulant, ...	Cultivated universally in Asia, ..		188
Tribe 5—Isatideæ.				
Isatis tinctoria. *Tetrad. Siliquosæ.* ..	blue dye, ...	Europe, ...		188
Camelina sativa. *Tetrad. Siliquosæ.* ..	oil used by soap-makers, & for lamps,	do.		188
Tribe 6—Brassiceæ.				
Brassica oleracea.* *Tetrad. Siliquosæ.* ..	cabbage, ...	Europe and India, ...		188
——— campestris and Rapa. ..	rape, ...	do. do.		188
——— Napus.	turnip, ...	do. do.		188
——— oleifera.	cultivated for its oil, ...	France, ...		188
Sinapis nigra.* *Tetrad, Siliquosæ.* ..	black mustard, acrid, bitter and oily,	England, ...		189
——— alba.*	white mustard, less energetic, ..	do.		190
——— ramosa.	cultivated for their oil, ...	India, ...		190
——— glauca.				
——— dichotoma.*				
——— juncea.				
Tribe 7—Raphaneæ.				
Rhaphanus sativus.* *Tetrad. Siliculosæ.*	alimentary & anti-scorbutic, but not of medicinal importance,	Europe, ...		191

NAT. ORDER VI. AND VII.—MAGNOLIACEÆ AND WINTERACEÆ.

			B. D.	*Page.*
Illicium anisatum. *Polyandria Polyg.*	stimulant carminative, ...	Canton, Japan, ...		192
Wintera aromatica. *Polyand. Tetragyn.*	stimulant, tonic and diaphoretic, ..	Straits of Magellan, Chili, Peru, &c.		192
Magnolia glauca. *Polyand. Polyg.* ..	probable substitute for guiacum, said to be useful in chronic rheumatism, ...	Middle and S. America, Nipal and Hills beyond Sylhet, ...		193
Liriodendron tulipifera. *Polyand. Polyg.*	stimulant, tonic, aromatic, ...	Forests in United States, ...		193
Michelia Champaca.* *Polyand. Polyg.*	bitter and aromatic, ...	Bengal, ...		193

NAT. ORDER VIII.—ANONACEÆ.

Anona squamosa.* *Polyand. Polyg.* ..	tonic and stimulant, used for destroying vermin,	Bengal, ...		193
——— reticulata.*	.. ..	.. ..		193
Habzelia, Xylopia, species of. *Polyand. Polyg.*	Æthiopian pepper,	Africa and America, ...		193
	tonic bitter, ...	West Indies,..		194
Guatteria longifolia.* *Polyand. Polyg.*	deserves examination, ...	India, ...		194

NAT. ORDER IX.— MENISPERMACEÆ.

Anamirta Cocculus, or Cocculus Indicus.* *Dioecia. Monad.*	bitter and poisonous, ...	Malabar and Eastern Islands, ..		194
Cocculus palmatus.* *Dioecia. Hexand.*	Colomba, a valuable tonic,.. ..	Shores of Oizo and Mozambique, ..		196

			B. D.	*Page.*
Cocculus Bakis. *Dioecia. Hexand.* ..	diuretic and bitter, ...	Senegal, ...		202
——— Fibraurea.	used by the Malays in agues and liver complaints, ...	Cochin China and China, ...		202
——— cinerascens.	used in intermittent and liver diseases,	Rio Janeiro, ...		202
——— platyphyllus.	do. do.	Bengal, ...		202
——— crispus.*	used by the Malays as a febrifuge remedy, ...	Java, Amboyna, ...		202
——— cordifolius.*	bitter tonic, ...	Bengal, ...		198
——— acuminatus. . ..	antidote to snake bites, ...	Coromandel and Bengal, ...		202
Frasera carolinensis or Walteri. *Tetrandria Monogynia*	bitter and astringent,	N. America, ...		197
Cissampelos glabra. *Dioec. Monadelph.*	tonic diuretic, ...	Sylhet, ...		200
——— convolvulacea.*	.. ..	Coromandel and Malabar, ...		200
——— Caapeba.	.. ..	Moluccas, ...		200
——— tetrandra.	.. ..	Amboyna, ...		201
——— Pareira.	tonic diuretic, ...	South America, ...		200
Clypea Burmanni.* *Dioec. Monad.* ..	very bitter, ...	Malabar, Coromandel, Ceylon, ..		202
——— hernandifolia (Ciss. hexandra and hernandifolia.)* ..	... ..	Beng. p. 200 and Malabar, ...		201
Pereira medica. *Dioec. Hexand.* ..	considered in Ceylon an excellent stomachic, ...	Ceylon, ...		202
Abuta rufescens. *Dioec. Hexand.* ..	do. do.	Cayenne and Guiana, ...		202

NAT. ORDER X.—BERBERACEÆ.

Berberis Lycium. *Hexand. Monog.* ...	tonic and gentle aperient, ...	Hilly districts of India, Nipal, and the Dhoon, ...		203
——— aristata.				
——— kunawarensis.	.. ..	Kunawur, ...		205

			B. D.	*Page.*
Berberis, asiatica or *tinctoria*,* ..	yellow dye, ...	Neelgherries, ...		205
——— *vulgaris*, ...	purgative, ...	Europe, ...		205

NAT. ORDER XI.—CAPPARIDEÆ.

Capparis spinosa. *Polyand. Monog.* ..	acid fruit *capers* used in pickles, ..	South of Europe and the Levant, ..		206
——— *sinaica*.		Mount Sinai, ...		206
——— *aphylla*.*		India, ...		206
Cratæva gynandra.* *Polyand. Monog.*	blister, ...	East Indies, ...		209
——— *Roxburghii*, (Tapia).* ..	tonic and febrifuge, ...	Ceylon and Malabar, ...		206
——— *Niirvala*, (religiosa).* ..	bitter and aromatic, ...	Common in India, ...		206
Cleome felina. *Polyand. Monog.* ..	astringent, ...	Northern India and Ceylon, ...		206
Gynandropsis pentaphylla.* *Polyand. Monog.* ..	stimulant and sudorific, ..	Do. do.		206
Polanisia viscosa.* *Polyand. Monog.* ..	vermifuge and stimulant, ...	Do. do.		206
——— *dodecandra* and *icosandra*.	blisters and counter-irritants, ..	Cochin China,...		206

NAT. ORDER XII.—FLACOURTIACEÆ.

Gynocardia odorata.* *Dioec. Pentand.*	used in cutaneous disorders, ..	Sylhet, ...		207
Hydrocarpus venenata. *Dioec. Polyand.*	poisonous and intoxicating, ..	Ceylon, ...		207
Flacourtia cataphracta.* *Dioec. Polyand.*	gentle astringent, ...	Behar, ...		207

NAT. ORDER XIII.—BIXINEÆ.

			B. D.	*Page.*
Bixa Orellana.* *Polyand. Monog.*	colouring substance *anotto*,.. ..	Cayenne and India, ...		207

NAT. ORDER XIV.—VIOLACEÆ.

Viola odorata. *(the violet)** *Pentand. Monog.*	Diaphoretic and emetic, ...	Europe and Asia, ...		208
—— serpens.*	Do. do.	Mussoorie, ...		209
—— reniformis.	Do. do.	Choor Mountain, ...		200
—— kunawurensis.	Do. do.	Kunawur, ...		209
Ionidium Ipecacuanha. *Pentand Monog.* ..	emetic, ...	Brazil, ...		209
—— microphyllum.	alleged specific in elephantiasis, ..	S. America, ...		209
—— suffruticosum.* *Pentand. Monog.* ..	demulcent, ...	India, ...		209

NAT. ORDER XV.—POLYGALEÆ.

Polygala Senega. *(snake root)* *Diadelph. Octand.*	acrid and nauseous, ...	N. America, ...		209
—— arvensis. *(crotalariodes)** ..	alleged snake antidote, ...	Nipal and Hymalayas, ..		211
Soulamea amara. *Diadelph. Hexand.* ..	bitter; used in cholera and ague, ..	Moluccas, ...		211
Krameria triandra..	powerful astringent, ...	Peru, ...		211

NAT. ORDER XVI.—PITTOSPOREÆ.

Several species have a liquid resin round the seeds.		India, ...		211

NAT. ORDER XVII.—DROSERACEÆ.

				B. D.	*Page.*
Small plants, *bitter, acrid, somewhat caustic,*					211

NAT. ORDER XIX.—CARYOPHYLLEÆ.

Dianthus, caryophyllus.* *Decand Monog.*	fragrant and aromatic, ...	Europe, ...			211
——— chinensis.*	do. do.	India, ...			211
Saponaria vaccaria and officinalis.* *Decand Monog.*	bitter and mucilaginous,	India, ...			212

NAT. ORDER XX.—LINEÆ.

Linum usitatissimum. *flax** *Pentand Pentag.*	used for its oil and mucilage,	Europe, Asia, ...			212
——— trigynium.*	.. ..	Lower Provinces of Bengal, ...			213
——— catharticum.	strongly purgative, but uncertain, ..	Europe, ...			213

NAT. ORDER XXI.—MALVACEÆ.

Malva sylvestris. *mallow.* *Monadelph Polyand.*	mucilaginous, ...	Cashmere and Europe, ...			214
——— mauritiana*	do.	Hydrabad, ...			214
——— rotundifolia.	do.	cultivated in India, ...			214
Althea officinalis. *Monad. Polyand.* ..	demulcent, ...	Europe and Cashmere, ...			214
——— rosea.*	do.	India, ...			214

			B. D.	*Page.*
Sida acuta.* *Monadelph Polyand.* ..	very bitter, promotes perspiration, increases appetite, ...	Bengal, ...		214
Abelmoschus longifolius.* *Monad. Polyand.*	highly nourishing and mucilaginous,	Tropical America, cultivated in India,		216
——— esculentus.	do. do.	West Indies, do. do.		217
Hibiscus Sabdariffa.* *Monad. Polyand.*	yields an excellent jelly, ...	West Indies, ...		217
——— moschatus.*	cordial, stomachic and antispasmodic,	East Indies and S. America, ...		218
——— Rosa sinensis.*	emollient, anodyne, and gentle aperient, ...	India, ...		218
Thespesia populnea.* *Monad. Polyand.*	external application for cutaneous disorders, ...	India, ...		218

NAT. ORDER XXII.—DIPTEROCARPEÆ.

Dryabalanops Camphora. *Polyand. Monog.*	yields camphor oil, ...	Borneo and Sumatra, ...		221
Shorea robusta.* *Polyand. Monog.* ..	resin for plasters, varnish, &c. ..	Morung, the Paulghat mountains, &c.		221
Vateria indica. *Polyand. Monog.* ..	resin, varnish, East Indian Copal,	Malabar, Mysore, ...		221
Dipterocarpus lævis.* *Polyand. Monog.*	yields, an essential oil resembling in properties Copaiba balsam,	Chittagong, Pegu, Assam, Tippera, &c.		222

NAT. ORDER XXIII.—TERNSTRÖMIACEÆ.

Cochlospermum Gossypium.* *Polyand. Monog.* ..	demulcent and emollient,	Arracan mountains, Bundlecund, hills round Adjigurh and Kalingur, Hurdwar, and the Kheree pass, ...		225

NAT. ORDER XXIV.—STERCULIACEÆ, OR BYTTNERIACEÆ.

			B. D.	*Page.*
Sterculia urens.* *Monad. Dodec.* ..	gum, not of much use, ...	Coromandel and Hindustan, ...		225
——— *fœtida.**	deemed aperient, mucilaginous, and astringent, ...	India and Java, ...		226
——— *Tragacantha.*	gum, ...	Sierra Leone, ...		226
Guazuma tomentosa.* *Polyadelph. Decand.*	sudorific, mucilaginous, ...	S. America, W. Indies, ...		226
Kydia calycina.* *Monad. Dodec.* ..	do. do, ...	Coromandel, Nipal, Nilgherries, ...		227
Theobroma Cacao.* *Polyad. Decand.*	chocolate, ...	W. Indies, cultivated in the Calcutta Garden, ...		227
Eriodendron anfractuosum.* *Monad. Pentand.*	gum given with spices in bowel complaints, ...	Coast of Coromandel, ...		227
Bombax malabaricum.* *Monad. Polyand.*	resinous gum, demulcent, ...	Bengal, ...		227
Helicteres Isora.* *Monad. Dodec.* ..	used as an application for sores behind the ears,	.. ..		228
Adansonia digitata.* *Monad. Polyand.*	emollient and mucilaginous, ..	Cultivated in India, ...		228

NAT. ORER XXV.—TILIACEÆ.

			B. D.	*Page.*
Corchorus olitorius.* *Polyand. Monog.*	used in fever drinks, ...	Bengal, ...		229

NAT. ORDER XXVI.—AURANTIACEÆ.

			B. D.	*Page.*
Citrus medica.* *Polyadelph. Polyand.*	juice slightly acid, ...	Bengal, Europe, ...		230
—— Limonum.*	lemon tree, useful in fevers, ..	do. do.		230

			B. D.	*Page.*
Citrus, Limetta.	produces oil of Bergamot, ...	India and Europe, ...		231
—— Aurantium.*	sweet orange, useful in fever, ..	Do. do.		231
—— vulgaris.*	bitter Seville orange, valuable tonic and febrifuge, ...	Do. do.		232
—— Decumana.*	no importance in medicine, ..	... .		232
Bergera Königii.* *Decand. Monog.* ...	stimulant, ...	mountainous parts of the coast of Bengal, ...		232
Feronia Elephantum.* *Decand. Monog.*	gentle stomachic, ...	most parts of India, ...		233
Ægle Marmelos.* *Polyand. Monog.* ..	deemed by the Javanese very astringent, ...	all parts of E. Indies		233

NAT. ORDER XXVII.—HYPERICINEÆ.

This order resembles the Guttiferæ in most of its botanical properties, and like these, some of its species yield a yellow, very cathartic juice.				234

NAT. ORDER XXVIII.—GUTTIFERÆ.

Hebradendron Cambogioides. *Polyand. Monog.*	gamboge, ...	Ceylon,..		235
—— pictorium.	do.	Wynaad, ...		235
Garcinia pedunculata.* *Polyand. Monog.*	very sharp and acid, ...	Used in curries, Rungpore, ...		235
—— Mangostana.*	celebrated mangosteen, ...	Eastern Islands, ...		236
—— cornea.*	exudes a yellow juice, ...	.. ..		236
Stalagmites ovalifolia.* *Polyand.* ..	considered to yield gamboge, ..	S. India and Ceylon, ...		236
—— pictoria...	inferior gamboge, ...	Mountainous districts of India, ..		236

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Calophyllum Inophyllum.* *Polyand. Monogyn.*	external application in rheumatism,	All parts of India, ...			238
——— Calaba.	yellow, translucent, adhesive, acrid and aromatic resin, ..	Travancore, ...			238
Mesua ferrea.* *Polyand. Monog.* ..	reputed antidote to snake poison, ..	Bengal, ...			239

NAT. ORDER XXIX.—CANELLEÆ.

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Canella alba.* *Polyand. Monog.* ..	aromatic tonic, ...	Caribbean Islands, S. America, cultivated in the Calcutta Gardens,			239

NAT. ORDER XXX.—SAPINDACEÆ.

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Sapindus emarginatus.* *Octand Monog.*	expectorant, ...	Bengal, ...			241
Paullinia pinnata. *Octand. Trigyn.* ..	acrid and narcotic, ...	Brazil, ...			242
Schmidelia serrata.* *Octand. Monog.* ..	astringent, ...	Bengal, ...			242
Schleichera trijuga.* *Octand. Monog.* ..	do, ...	various parts of India, ...			242

NAT. ORDER XXXI.—ÆSCULACEÆ.

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Æsculus Hippocastanum. *Heptand. Monog.*	very astringent, ...	Europe, ...			243

NAT. ORDER XXXII.—MELIACEÆ.

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Melia Azedarach.* *Decand. Monog.*..	fragrant, ...	cultivated in the Botanical Garden, Calcutta, ...	243
—— sempervirens. (Bukayun,)*	smaller tree of the same kind, emetic, laxative, and anthelmintic,	.. ..	244
Azadirachta indica,* *Decand. Monog.*	astringent and bitter, ...	do. do.	244
Trichilia emetica. *Decand. Monog.* ..	bitter, and reputed to be poisonous,	mountains of Yemen and Senegal,..	245
Guarea trichilioides. *Octand. Monog.*	violent emetic and purgative, ..	.. ..	246
Xylocarpus Granatum.* *Octand. Monog.*	open to investigation, ...	Sunderbuns, ...	246
Walsura piscidia.* *Decand. Monog.* ..	fish poison, ...	Circar mountains, ...	247
——— robusta. (Monocyclis. Wall.)*	.. ..	Sylhet, ...	247

NAT. ORDER. XXXIII.—CEDRELACEÆ.

Swietenia Mahogani.* *Decand. Monog.*	astringent, ...	S. America, Peninsula of India, ...	247
Soymida febrifuga. (Rohunna,)* *Decand. Monog.*	astringent tonic,... ...	Mountainous districts of India, Rajamundry Circars, district of Cuddapa, Chunar Hills, and jungles to the south of Hazarebāg, ...	247
Cedrela Toona.* *Decand. Monog.* ...	powerfully astringent, ...	Bengal, ...	249
Chickrassia tabularis.* *Decand. Monog.*	powerfully astringent, ...	mountains East of Bengal, ...	250
Khaya senegalensis. *Octandria. Monog.*	very bitter, ...	on the banks of the Gambia, ...	250

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Vitis vinifera.* *Pentand. Monog.*	affords raisins and wine,	south of Asia Minor,			251
—— carnosa.*	acrid,	forests of Bengal,			254

NAT. ORDER XXXV.—GERANIACEÆ.

Geraniums and Pelargoniums. *Monad. Hept. and Decand.*	extremely astringent,	Cape and St. Helena,			254

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Liquidambar Altingia. *Monoecia Polyand.*	bitter, hot, and aromatic,	Java mountains,			255
———— orientale.	yields a balsamic fluid resembling turpentine,	Cyprus and Levant Islands,			255

NAT. ORDER XXXVII.—OXALIDEÆ.

Oxalis Acetosella. *Decand. Pentag.*	poisonous acid,	groves and shady places in Europe,			255
—— corniculata.*	do. do.	common all over India,			257
Averrhœa Carambola.* *Decand. Pentag.*	pickle, and an ingredient in native electuaries,	Bengal,			257
——— Bilimbi.*	do. do.	Bengal,			257

NAT. ORDER XXXIX.—ZYGOPHYLLEÆ.

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Guaiacum officinale.* *Decand. Monog.*	acrid, bitter, sharp, sudorific, ..	Jamaica and Hispaniola, ...		258
Tribulus terrestris.* *Decand. Monog.*	astringent, in Cochin China, ..	aperient and diuretic, S. of Europe, ..		259
Zygophyllum Fabago. *Decand. Monog.*	vermifuge and astringent, ...	S. America, ...		259
Porliera hygrometrica. *Octand. Monog.*	resembles guaiacum, ...	Peru and Chili, ...		259
Melianthus. *Didynam. Angiosp.* ..	fœtid plants,..	Europe, ...		259
Balanites ægyptiaca.* *Octand. Monog.*	bitter and offensive,..	Delhi and Allahabad, ...		260

NAT. ORDER XL.—RUTACEÆ.

Ruta graveolens. *Decand. Monog.* ..	acrid and bitter, ...	South of Europe, ...		260
—— albiflora.*	do.	Nipal, Kemaon, ...		260
—— angustifolia.*	do.	Gardens of India, ...		260
Peganum Harmala. *Dodecand. Monog.*	used in native medicine as rue, ..	Many parts of India and the gardens of the Taj, Agra, ..		260
Galipea Cusparia. *Pentand. Pentagynia.*	bitter, and febrifuge, ...	Highlands of Carony and southern and back Missions of the Orinoko, ...		261
Malambo.	strong bitter and aromatic,.. ..	Colombia, ...		262
Ticorea.	similar properties, ...	S. America, ...		262
Evodia febrifuga. *Tetrand. Monog.* ..	valued in fevers, ...	Brazil, ...		262
Barosma crenulata. *Pentand. Monog.*	powerful diuretic, ...	Cape of Good Hope, ...		262

NAT. ORDER XLI.—XANTHOXYLACEÆ.

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Xanthoxylum alatum.* *Tetrand. Monog.*	pungent aromatic,..	Nipal and hilly countries north of Bengal,..		263
——— Avicennæ.	powerful stimulant, popular antidote against poisons, ..	China,...		264
——— fraxineum.	local stimulant to secreting surfaces,	United States,..		264
——— Clavis Herculis. ..	stimulant and febrifuge, ...	West Indies, ...		264
——— piperitum.	powerful aromatic, ...	China, ...		264
——— Budrunga.* ..	warm, spicy, pepper-like, ...	India, ...		264
——— Rhetza.*.. ..				
——— hostile.				
Ptelea trifoliata.* *Tetrand. Monog.* ..	bitter, aromatic, anthelmintic, ..	United States,..		265
Toddalia aculeata.* *Pentand. Monog.*	strongly stimulant, deserves careful trial, ...	Coast of Coromandel, ...		265
Brucea sumatrana.* *Tetrand. Monog.*	considered a valuable remedy in dysentery and severe cases of diarrhœa, ...	Sumatra, Moluccas, and Cochin China,		266

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Quassia amara.* *Decand. Monog.* ..	simple, and bitter tonic, ...	Surinam, Guiana, Colombia, and Panama, ...		267
——— Simaruba.	do. do.	Guiana, Cayenne, and Jamaica, ..		268

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Picræna excelsa. *Pentand. Monog.*	intensely bitter, ...	Jamaica, ...				269
Nima quassioides. *Pentand. Monog.*	simple, and bitter tonic, ...	Himalayas and Nipal, ..				269

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Gomphia angustifolia.* *Polyand. Monog.* ..	tonic, stomachic, and anti-emetic, ..	Ceylon and India, ...				269

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Spondias mangifera. *(Poupartia)** *Decand. Pentag.*	mild insipid gum, ...					270

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Coriaria nipalensis.* *Dioecia Decandria.* ..	astringent, used by dyers, ...	Himalayas and Nipal, ..				270

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Celastrus paniculatus.* *Pentand. Monog.* ..	empyreumatic oil used in medicine,	Circar mountains, Mysore, ..				271
Maytenus chilensis. *Pentand. Monog.* ..	a wash for swellings, ...	Chili, ...				271

NAT. ORDER XLVII.—AQUIFOLIACEÆ.

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Ilex Aquifolium. *Tetrand. Tetragyn.*	emollient and diuretic, ...	Europe, ...		271
—— dipyrena.	.. ..	Mussoorie, ...		272
—— serrata.	.. ..	Nipal, ...		272
—— vomitoria.	mild emetic, produces cheerful intoxication, ...	Florida and Carolina, ...		272
—— paraguaiensis.	Paraguay tea, ...	Paraguay, ...		272
Myginda Uragoga. *Tetrand. Tetragyn.*	powerful diuretic, ...	Carthagena, ...		272
Prinos verticillatus. *Hexand. Monog.*	valuable tonic, ...	United States, ...		272
Euonymus tingens.* *Pentand. Monog.*	yellow bark used by Hindus to mark the Tika on the forehead.	Bengal, ...		272

NAT. ORDER XLVIII.—RHAMNEÆ.

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Zizyphus Œnoplia.* *Pentand. Monog.*	pleasant acid, ...	all over India, ...		273
——— Jujuba.*	used in the Moluccas for diarrhœa,	China and East Indies, ...		273
——— vulgaris.*	used in the mucilage called jujubes,	Syria, Persia, and Hindostan, ..		273
Rhamnus catharticus. *Pentand. Monog.*	violent cathartic, ...	hedges and woods in Europe, ..		273
——— Frangula.	emetic fruit, ...	do. do.		274
——— infectoria.	used for dyeing leather yellow, ..	South of Europe, ...		274
Berchemia volubilis. *Pentand. Monog.*	used in cachectic disorders, and said to be antisyphilitic, ..	Carolina and Virginia, ...		274
Ceanothus americanus.* *Pentand. Monog.*	astringent, and used in gonorrhœa,	United States, ...		274

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Odina Wodier.* *Octand. Tetrag.* ..	resinous gum, ...	Upper India, ...	276
Pistacia vera.* *Dioec. Pentand.* ..	aromatic oil, nut used in emulsions,	S. of Europe and Asia, ...	276
——— Terebinthus.*	yields a valuable resinous juice, called Chian turpentine, ..	Barbary, Greece, and south of France,	277
——— Lentiscus.	mastic resin, ...	South of Europe and Asia Minor, ..	278
Semecarpus Anacardium.* *Pentand. Digyn.*	black acrid juice, used for marking cotton cloth, ..	Mountains of India, ...	279
Anacardium occidentale.* *Decand. Monog.*	slightly acrid, ...	East and West Indies, ...	280

Tribe 2—Sumachineæ.

Rhus Coriaria. Sumac. *Pentand. Trigyn.*	valuable in the arts, ...	Persia, Syria, Palestine & S. of Europe,	280
—— Toxicodendron.*	acrid and corrosive, antiparalytic, ..	Europe, ...	280
—— Kakarasingee...	long known in the Hindoo Materia Medica, ...	Himalayas, ...	282

Tribe 3—Burseraceæ.

Boswellia thurifera.* *Decand. Monog.*	stimulant, astringent, diaphoretic,..	central India and Shahabad country,	283
Protium gileadense. *Dioecia. Decand.*	aromatic, bitter, but stimulant, astringent, tonic, ...	Arabia, Ethiopia, & East Indies, ..	284
——— Kataf, (Myrrh tree,) ..	bitter, acrid, and aromatic, ...	Arabia,..	285
Icica Icicariba. *Decand. Monog.* ..	similar to Boswellia thurifera, ..	South America, ...	286

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Commiphora madagascarensis.* *Octandria Monog.*	similar to Myrrh, ..	Sylhet, Assam, and Madagascar, ..		287
Canarium bengalense.* *Monadelph. Hexand.*	pure, clear, amber-coloured gum,	Sylhet and adjacent Mountains, ...		288

NAT. ORDER LI.—MORINGEÆ.

Moringa aptera. *Decand. Monog.* ..	acrid, rubefacient, ...	Sennaar, Cairo, and Palestine, ..		289
——— pterygosperma.*	pungent, stimulating, and aperient,	India, ...		289

NAT. ORDER LII.—LEGUMINOSÆ.

Myrospermum peruiferum, *Decand. Monog.*	balsam of Peru, ...	Peru, New Granada, Colombia, Mexico, and Carthagena, ..		290
——— toluiferum.	balsam of Tolu, ...	South America, ...		291
Trigonella Fœnum græcum.* *Diad. Decand.*	strong odour, mucilaginous, ...	South of Europe, Asia Minor, and India, ...		291
Melilotus officinalis.* *Diadelph. Decand.*	odoriferous and fragrant, ...	Europe, ...		292
Tephrosia purpurea.* *Diadelph. Decand.*	given by the natives in dyspepsia and chronic diarrhœa, ..	Coast of Coromandel, ...		292
——— apollinea, ...	yields indigo, ...	Egypt, ...		292
——— toxicaria.*	intoxicates fish, ...	Jamaica, ...		292
Indigofera Anil.* *Diadelph. Decand.* ..	used by the natives in hepatitis, ..	Bengal, ...		292
——— enneaphylla.* *Diadelph. Decand.*	alterative, in old syphilitic diseases,	.. ..		293
Gylcyrrhiza glabra. *Diadelph. Decand.*	liquorice, ...	South of Europe, Crete, Candia, Cochin China, ...		293

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Colutea arborescens. *Diadelph. Decand.*	used to adulterate the senna of Aleppo,	S. of Europe and of Asia Minor,	..	294
Astragalus verus. *Diadelph. Decand.*	affords the tragacanth gum,	Candia,	..	294
——— gummifer.	do.	Mount Lebanon,	..	294
——— creticus...	do.	Crete and Ionia,	...	294
——— aristatus.	do.	Peloponnesus and Cyprus,	...	294
Alhagi maurorum. *Diadelph. Decand.*	manna of the Desert, ...	Egypt, Syria, Mesopotamia, Persia, and India, common about the Jumna and near Delhi, ...		295
——— napalensium.	* * *	Nipal, ...		295
Agati grandiflora. *Diad. Decand.* ...	bark, powerful bitter tonic, ...	leaves aperient, common in India, ..		296
Æschynomene Sesban.	charcoal, ...	Bengal, ...		296
——— paludosa.	light sponge wood of Bengal, ..	Bengal, ...		296
Butea frondosa.* *Diad. Decand.* ..	powerful astringent, ...	mountains of India, ...		296
——— superba.* *Diad. Decand.* ..	do. do.	do. do.		297
Abrus precatorius.* *Diad. Decand.* ..	the root a substitute for liquorice, ..	India, Africa, and America, ...		297
Mucuna pruriens.* (cowage) *Diadelph. Decand.*	used in the treatment of worm cases,	do. do.		297
Pterocarpus Draco. *Diadelph. Decand.*	astringent, ...	American Islands, especially Guadaloupe, ...		297
——— santalinus.*	dye, and astringent medicine among the Arabs, ...	Pulicat, Ceylon, and Mysore, ..		298
——— erinaceus.	a strong, astringent, brittle gum-resin, ...	Senegal, ...		298
——— Marsupium.*	do. do.	Circars, ...		299
TRIBE—MIMOSEÆ.				
Acacia vera.* *Polyand. Monog.* ...	acacia juice and gum arabic, ..	Senegal, Egypt, ...		299
——— Senegal.	Senegal gum, ...	.. ..		301

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Acacia arabica.*	similar, but inferior to A. vera, bark powerfully astringent,	all over India, ...	301
——— Sassa.	gum opocalpasum, mucilaginous and acts like tragacanth, ..	Africa near Mogadore, and the Island of Bourbon, ...	301
——— Catechu.*	astringent, tonic, ...	East Indies, ...	301
*Vachellia farnesiana.** *Polyand. Monog.*	yields abundance of gum, ...	Bengal, ...	303
Prosopis, species of. *Decand. Monog.* ..	considered poisonous, yields good gum	Jamaica, ...	303
Inga Sassa. *Polyand. Monog.*	one of the false tragacanth gums, ..	Abyssinia, ...	303
—— fagifolia.	acrid astringent bark, ...	Barbadoes, ...	303
—— unguis cati.*	said to act as a diuretic, astringent,	West Indies, ...	300
TRIBE—CÆSALPINIEÆ.			
Andira inermis. *Diadelph. Decand.* ..	resinous, odour nauseous, taste bitter and austere, ..	Jamaica and Martinique, ...	303
—— surinamensis.	cathartic, emetic, narcotic, ...	.. ..	303
Arachis hypogæa.* *Diadelph. Decand.*	the oil, a perfect and cheap substitute for olive oil, ...	S. America, Africa, many parts of Asia,—Calcutta, ...	304
Dipterix odorata. *Diad. Decand.* ..	a perfume for snuff, ...	woods of Guiana, ...	304
Cathartocarpus Fistula.* *Decand. Monog.*	purgative, ...	India and Egypt, ...	305
Cassia elongata. *Decand. Monog.* ..	Senna plant, ...	interior of India, ...	306
—— acutifolia.	senna generally used for medicinal purposes, ...	Arabia Felix, Upper Egypt, Arabia, and Sennaar between the Nile and Red Sea, ...	306
—— ethiopica.	do. do.	finds its way chiefly through Red Sea, Surat, Bombay, and Calcutta, cultivated successfully at Tinnevelly and Seharunpore, ..	306
—— lanceolata.*	do. do.		

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Cassia obovata.* *Decand. Monog.* ..	senna generally used for medicinal purposes, ...	Mysore, Egypt, Suez, Nubia, and central Africa, ...	307
—— alata.*	general tonic, and powerful specific in ring-worm, ...	.. ..	308
—— auriculata.*	astringent tonic, ...	Coromandel, ...	309
—— Tora.*	fœtid, mucilaginous, and gently aperient, common in the plains,	Bengal, ...	309
—— Absus.*	used in cronic ophthalmia, ...	Deyra Dhoon and the Plains, ..	309
—— occidentalis.*	very offensive, used in cutaneous maladies, and aperient,	Bengal, ...	309
Tamarindus indica.* *Monad. Dodec.*	a gentle purgative, allays thirst and feverishness, ...	East and West Indies, ...	309
Hæmatoxylon campechianum.* *Decand. Monog.*	valuable red and astringent dye,	Campechy and Jamaica, ...	310
Cæsalpinia echinata.* *Decand. Monog.*	Brazil wood, ...	.. ..	310
—— Sappan*	substitute for logwood, astringent, ..	Siam and Amboyna, ...	310
—— Bonducella.*	a powerful tonic & valuable febrifuge,	East and West Indies, ...	311
Copaifera officinalis. *Decand. Monog.*	copaiba, or copavi balsam, ...	West Indies, Peru, Brazil, ...	311
Hymenæa Courbaril.* *Decand. Monog.*	hard wood used by cabinet makers, gives a high polish, ..	S. America, ...	313
—— Copal.	copal resin for varnishes, ...	Do.	314
Aloexylon Agallochum. *Decand. Monog.*	tonic and stimulant, ...	Cochin-China, ...	314
Clitoria Ternatea.* *Diadelph. Decand.*	brisk purgative, but not safe, ..	India, ...	315
Anagyris fœtida. *Diadelph. Decand.* ..	seeds acrid and narcotic, ...	South of Europe, ...	315
Baptisia tinctoria. *Diadelph. Decand.* ..	slightly astringent, cathartic and emetic, ...	United States, ...	315

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Genista tinctoria. *Diad. Decand.* ..	good yellow dye, ...	common in Europe, ...	316
Cytisus Laburnum. *Diad. Decand.* ..	poisonous, ...	Europe, ...	316
——— *scoparius.*	diuretic and cathartic, ...	do.	316
Anthyllis Hermanniæ.	has diuretic roots, ...	do.	316
Psoralea corylifolia.* *Diad. Decand.* ..	seeds stomachic and deobstruent, ..	India, ...	316
Pueraria tuberosa.* *Diad. Decand.* ..	roots used as a poultice for swelled joints, ...	Circar mountains, ...	316
Sabinea florida. *Diad. Decand.* ..	poisonous,...	West Indies, ...	316
Piscidia Erythrina. *Diad. Decand.* ..	powerful narcotic and diaphoretic, ..	West Indies, ...	316
Coronilla. *Diad. Decand.*	two species are described, having cathartic leaves and juice, ..	Bengal,..	316
——— picta.	emollient leaves, ...	Bengal, ...	317
Arthrolobium scorpioides. *Diad. Decand.*	blister, ...	Europe, ...	
Ormocarpum sennoides.* *Diad. Decand.*	tonic and stimulant, ...	Bengal,..	317
Lathyrus Aphaca.* *Diad. Decand.* ..	narcotic, ...	Europe,...	317
——— Cicera.	seeds poisonous, ...	Spain, ...	317
——— sativus.* *Diad. Decand.* ...	oil of seeds a powerful cathartic, ..	Europe, ...	317
Phaseolus radiatus.* *Diad. Decand.* ...	said to be narcotic, ...	.. ..	317
——— trilobus.	said to be tonic and sedative, ..	Bengal, ...	317
Poinciana pulcherrima.* *Decand. Monog.*	purgative, said to be a powerful emmenagogue, deserves investigation, ...	Upper India, ...	317
Bauhinia tomentosa.* *Decand. Monog.*	used in dysentery, ...	Ceylon, Malabar, and Coromandel, ...	317

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Prinsepia utilis.* *Icosand. Monog.* ...	yields fixed oil, ...	dry rocks near Muttiana, ...		318
Tribe 2—Amygdaleæ, or Almonds.				
Amygdalus communis.* *Icosand. Monog.*	sweet and bitter almond, ..	Himalayas, Mauritius, Taurus, Caucasus, and Hindookosh, Europe and Cashmere, ..		319
——— Persica, peach tree.* *Icosand. Monog.*	purgative and narcotic, ...	Europe, Persia, Mysore, China, Bengal, ...		322
Armeniaca vulgaris.* *Icosand. Monog.*	apricot tree, oil of clear yellow colour,	Himalayas, ...		323
Cerasus Caproniana. *Icosand. Monog.*	cherry tree, kernel of the fruit contains elements of hydrocyanic acid, ...	Europe, Himalayas, Caucasus, Cashmere, &c...		323
——— Padus.	cultivated for the manufacture of kirschenwasser, ...	France and Black Forest, Switzerland,		323
——— Laurocerasus.	taste very decided, rather styptic bitter, strong, and resembling that of bitter almonds, ..	Trebizond and Affghanistan, ...		323
Prunus spinosa. *Icosand. Monog.* ...	an astringent substitute for catechu,	France, ...		324
——— domestica.	prunes, laxative, ...	Europe and Asia, ...		324
Tribe 3—Roseæ.				
Spiræa Ulmaria. *Icosand. Pentag.* ..	a principle resembling benzoyle has been detected; all the species are astringent, but few have marked properties, ..	Europe, Asia, ...		324

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Brayera anthelmintica. *Icosand. (Dodecand.) Digyn.*	drastic purgative, ...	Europe, ...	325
Geum urbanum. *Icosand. Polygyn.* ..	distinguished by its smell of cloves, and styptic, bitter taste, ...	Europe, ...	325
Rubus Idæus. *Icosand. Polygyn.*	raspberry, abounds in citric and malic acid and sugar, ..	.. ..	325
——— concolor.	nearest species in the Himalayas, ..	.. ..	325
Potentilla Tormentilla. *Icosand. Polygyn.* ..	the root rich in tannic acid, ..	Europe, ...	325
——— denticulosa.	.. ..	North India, ...	325
Agrimonia Eupatoria. *Dodecand. Digyn.* ..	contains tannic and gallic acid, substitute for tea, ...	Europe, ...	325
——— nipalensis.*	closely allied, ...	Nipal, ...	325
Rosa canina. *Icosand. Polygyn.*	dog-rose, acidulous and astringent,	Europe, ...	326
—— gallica.	French or Provence red rose, unimportant, ...	Persia, ...	326
—— centifolia.*	hundred-leaved rose, less astringent and more laxative than the Provence rose, ...	Syria, cultivated in Europe, ..	326
TRIBE 4—POMACEÆ.			
Malus communis.* *Icosand. Monog.* ..	apple, abounds in malic acid & sugar,	Asia Minor and Europe, ..	329
Cydonia vulgaris.* *Icosand. Monog.* ..	quince, demulcent tonic, ...	Asia Minor, Cabul, Bokhara,	330

NAT. ORDER LIV.—RHIZOPHOREÆ.

Includes no medicinal article but the mangrove, which is very astringent, ...			330

NAT. ORDER LV.—ONAGRARIÆ.

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Trapa natans. *Tetrand. Monog.*	considerable part of the food of the inhabitants of Cashmere,	..	330	
—— bispinosa.*				

NAT. ORDER LVI.—LYTHRARIÆ, OR SALICARIÆ.

Ammannia vesicatoria.* *Tetrand. Monog.* ..	severe blister, found in wet land during the rains,	.. .. ..	301	

NAT. ORDER LVII.—TAMARISCINEÆ.

Tamarix indica and dioica.* *Pentand. Trigyn.*	bitter and astringent, ...	India, ...	332	
——— Furas.	do. do, ...	Delhi, ...	382	
——— gallica.	Arabian manna, ...	Mount Sinai, ...	332	

NAT. ORDER LVIII.—MYRTACEÆ.

Myrtus communis.* *Icosand. Monog.* ..	common myrtle, aromatic, styptic, and bitter, ...	Asia Minor and South of Europe,	333	
—— Pimenta.*	allspice, aromatic, styptic, stimulating, ...	S. America, W. Indian Islands,	333	

			B. D. Page.
Myrtus caryophyllata. *Icosand. Monog.* ..	aromatic, hot and sharp, slightly bitter and astringent, ..	Jamaica, Cuba, Ceylon, ..	334
Caryophyllus aromaticus.* *Icosand. Monog.*	cloves, aromatic, sweet, strong, hot, acrid, ...	New Guinea, Amboyna, and the Moluccas,..	334
Eucalyptus resinifera.* *Icosand. Monog.* ..	astringent, ...	Australia, cultivated in the Calcutta Garden, ...	336
Melaleuca Cajeputi.* *Icosand. Monog.* ..	yields the cajeput oil, stomachic, stimulant, and useful liniment or embrocation, ..	Banda, Java, and Amboyna, ..	336
Leptospermum. *Icosand. Monog.*	leaves used as tea, ...	New Holland and New Zealand,	337
Alangium. (a separate order) *Dodecand. Monog.*	juice a violent purgative, ..	.. ..	337
Psidium pyriferum.* *Icosand. Monogyn.* ..	guava tree, ...	.. ..	337
Eugenia malaccensis.* *Icosand. Monog.*	.. ..	.. ..	337
——— Jambos.*			
Lecythis. *Monadelph. Polyand.*	yields almonds, two species bitter fruit, ...	.. ..	337
Barringtonia racemosa.* *Icosand. Monog.* ..	slightly bitter, aperient, cooling, and febrifuge, ...	Malabar, ...	337
——— speciosa.*	used for intoxicating fish, ...	Java, ...	337
——— acutangula.*	.. ..	Chittagong, ...	337

NAT. ORDER LIX.—GRANATEÆ.

Punica Granatum.* *Icosand. Monogyn.* ..	pomegranate, strongly astringent, and specific in tape worm, ..	Cabul, Bokhara, Mezenderan, Asia Minor, Bengal,.. ..	338

NAT. ORDER LX.—MEMECYLEÆ.

			B. D. *Page.*
No article of medicinal value.			339

NAT. ORDER LXI.—COMBRETACEÆ.

Terminalia Chebula.* *Decand. Monog.*	gently laxative and astringent, ..	Forests of Bengal, ...	340
——— citrina.*	gently purgative, ...	do. do.	340
——— alata.*	astringent and febrifuge, ...	do. do.	340
——— moluccana.	substitute for T. bellerica, ...	Sylhet, Moluccas, ...	341
——— Catappa.*	valuable timber tree, astringent, black paint, ...	Cultivated in India, ...	341
——— Bellerica.*	astringent, tonic, and attenuant, ..	Mountains of India, Mysore, ...	341
——— Vernix.	Chinese black lacquer, ...	China, ...	341

NAT. ORDER LXII.—CUCURBITACEÆ.

Feuillea trilobata. *Dioec. Monad.* ..	powerful emetic and cathartic, ..	Brazil, ...	342
——— cordifolia.	do. do.	West India Islands, ...	342
Lagenaria vulgaris.* *Monoec. Monad.*	poisonous, ...	East Indies, ...	343
Cucumis utilissimus.* *Monoec. Monad.*	seeds diuretic, ...	Cultivated high lands, Bengal, ..	343
——— Colocynthis.	colocynth—cathartic, ...	Sandy lands of Coromandel, Kaira in Guzerat, Tirhut, and the Doab near Delhi, ...	344
——— Hardwickii.*	hill colocynth, ...	foot of the Himalayas, Rajmahal, ..	345

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Cucumis Pseudo-colocynthis.* ..	similar to the true colocynth in properties, ...	plains of Northern India, ...	345
Luffa amara. *Monoec. Pentand.* ..	violently cathartic, emetic, ...	hedges, dry uncultivated places in the East Indies, ...	346
—— *Bindaal.*	considered a powerful remedy in dropsy, ...	Northern India, ...	346
Bryonia rostrata. *Monoec. Monad.* ..	astringent and emollient poultice in piles, ...	Tranquebar, ...	347
—— alba.	same as B. dioica, ...	Bengal, ...	347
—— dioica.*	acrid and purgative, produces violent vomiting, ...	Europe, India, ...	347
—— epigæa.	aperient and alterative, ...	Bengal, ...	347
—— scabra.	aperient, ...	do.	348
—— callosa.	given in worm cases, ...	do.	348
—— grandis.	juice of the leaves applied to obstinate ulcers, ...	do.	348
Momordica Elaterium. *Monoec. Monad.*	employed for apoplexy, dropsies, and obstinate constipations, ...	South of Europe, ...	348
—— mixta.*	inert as a medicine, ...	Bengal, ...	349
Trichosanthes palmata.* *Monoec. Monad.*	seeds reckoned poisonous, ..	forests of India, ...	349
—— amara.	seeds bitter, astringent, and sometimes emetic, ...	St. Domingo, ...	350
—— villosa.	fruit acts like colocynth, ...	Java, ...	350
—— cordata.	used as a substitute for colombo, ..	near the Megna, ...	350
—— cucumerina.*	fruit reckoned an anthelmintic, ..	hedges in Bengal, ...	350

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Tricosanthes dioica.* *Monoec. Monad.*	described as a powerful and safe cathartic,	Bengal,		351
Muricia cochinchinensis.	aperient,	China and Cochin China,		351

NAT. ORDER LXIII.—PAPAYACEÆ.

Carica Papaya.* *Dioec. Decand.*	deemed a powerful vermifuge,	Mauritius, Bengal,		352

NAT. ORDER LXIV.—PASSIFLOREÆ.

Passiflora quadrangularis.* *Monad. Pentand.*	said to be a powerful narcotic,	W. Indies,		353
——— Contrajerva.	said to be carminative,	Mexico,		353
——— fœtida.*	esteemed as an emmenagogue,	W. Indies,		353

NAT. ORDER LXV.—PORTULACEÆ.

Portulaca quadrifida.* *Dodecand. Monog.*	externally applied in erysipelas and given in dysuria,	Bengal,		353
——— oleracea.*	eaten by the Hindoos, considered emollient and diuretic,	Cochin China,		353

NAT. ORDER LXVI.—PARONYCHIEÆ.

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Trianthema obcordata.* *Decand. Digyn.*	considered cathartic, ...	Found in the Bazars, ...		353
——— decandra.*	a decoction of bark of the root aperient, ...	Bengal,..		353
Achyranthes lanata.* *Pentand. Monog.*	root deemed demulcent, used in strangury, ...	Bengal, Colombo, ...		354

NAT. ORDER LXVII.—CRASSULACEÆ.

Sempervivum tectorum. *Dodec. Dodecag.*	refrigerant, used internally and externally, ...	Temperate and cold parts of India, ..		354

NAT. ORDER LXVIII.—FICOIDEÆ.

Mesembryanthemum. *Icosand. Pentag.*	ready source of soda, ...	Europe, India,..		354

NAT. ORDER LXIX.—CACTEÆ.

This order affords the plants on which the Cochineal insects feed. *Icosand. Monog.*		Mexico, Bengal, ...		354

NAT. ORDER LXX.—GROSSULARIÆ.

Red and black currants of European gardens. *Pentandria Monogynia.*				354

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Astrantia major. *Pentand. Digyn.* ..	acrid and poisonous, . ..	Europe, ...		356
Eryngium campestre. *Pentand. Digyn.*	aromatic and tonic,..	Middle and South of Europe, ..		356
Cicuta maculata. *Pentand. Digyn.* ..	very dangerous poison, ...	United States,..		356
—— virosa..	a dangerous poison, ...	Ditches and banks of rivers in Europe and Siberia, ..		356
Apium graveolens.* *Pentand. Digyn.*	*celery*, stimulant, ...	Marshy grounds in Europe, the Caucasus, Mexico, Levant and Affghanistan, ...		356
Petroselinum sativum.* *Pentand. Digyn.*	*parsley*, diuretic, ...	Shady rocks of Europe and Levant,..		357
Ptychotis coptica. *Pentand. Digyn.* ..	stimulant aromatic,..	Egypt and Candia, ...		357
—— Ajowain.*	excellent remedy in flatulent colic,	India, ...		357
—— sylvestris.	stomachic, aromatic, and a remedy in flatulence, ..	Khadir lands of the Saharunpore district, ...		358
—— involucrata.	substitute for parsley, ...	India, ...		358
Sison Amomum. *Pentand. Digyn.* ..	pungent, and aromatic when dry, ..	Europe, ...		358
Carum Carui. *Pentand. Digyn.* ..	*carraway* plant, essential oil much used in pharmacy,	Meadows and pastures in Europe, ..		358
—— nigrum.	do. do...	Brought into India from Kunawur, ..		358
Pimpinella Anisum. *Pentand. Digyn.*	*aniseed*, stomachic, especially for children, ...	Egypt, Scio, Levant, ...		358
Œnanthe crocata. *Pentand. Digyn.* ..	Hemlock drop-wort, extremely poisonous, ...	Europe, ...		359
—— Phellandrium.	less energetic than the last, ..	Europe, ...		359
Æthusa Cynapium. *Pentand. Digyn.*	poisonous, ...	Europe, ...		359
Fœniculum vulgare. *Common fennel.*	*Pentand. Digyn.* an essential oil is prepared from the seeds,	Europe, ...		360

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Fœniculum dulce. *Pentand. Digyn.* ..	*sweet fennel*, essential oil much used in medicine, ..	Italy and Portugal, ...	360
——— *Panmori.**	same properties as F. vulgare ..	India, ...	360
Athamanta cretensis. *Pentand. Digyn.*	warm and aromatic.	Middle and South of Europe, ..	360
Meum athamanticum. *Pentand. Digyn.*	aromatic and sweet.	Mountainous parts of Europe, ..	361
——— *Mutellina.*	Do.	do.	361
Angelica nemorosa. *Pentand. Digyn.* ..	root acrid, remedy for the itch, ..	Naples, ...	361
Archangelica officinalis. *Pentand. Digyn.*	good aromatic tonic, ...	N. of Europe in watery places, ..	361
Opoponax Chironium. *(Opoponax.)* *Pentand. Digyn.*	resembles asafœtida in action but weaker,	South of Europe and Asia Minor, ..	361
Ferula Asafœtida, *(asafœtida.)* *Pentand. Digyn.*	powerful carminative and stimulant tonic.	Persia, Herat, mountains of Laristan and Belochistan, ..	362
—— persica.	.. ..	Persia, ...	363
—— orientalis.	gum resin called *ammoniacum ?*	Asia Minor, Greece, and Morocco, ..	363
—— Hooshee.	resembles the asafœtida, and yields a gum like the opoponax, ...	Belcochistan, ...	364
—— Ferulago.	yields a secretion supposed to be galbanum, ...	Coasts of the Mediterranean, the Caucasus, &c.	364
Dorema Ammoniacum. *Pentand. Digyn.*	yields ammoniacum resin ? ..	Persia, plains of Yerde Kaust, Kumisha, in the province of Irak, and near the town of Jezud Khast, ...	364
Péucedanum officinale. *Pentand. Digyn.*	deemed diuretic and antispasmodic,	Meadows and shady places throughout Europe, ...	365
——— Oreoselinum. *Pentand. Digyn.*	considered powerful alimentary stimulant, ...	Middle of Europe and the Caucasus, ..	365

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Imperatoria Ostruthium. *Pentand. Digyn.*	acrid and bitter, used in toothache,	Europe and Newfoundland, ...		365
Anethum Sowa,* *Pentand. Digyn.* ..	aromatic and carminative, ...	Cultivated in Bengal, ...		366
——— graveolens.	carminative, ...	Europe, Levant, Astrakan, Egypt, Cape of Good Hope, ..		366
Heracleum Spondylium. *Pentand Digyn.*	acrid, capable of producing ulcers on the skin, ...	Siberia and Unalashaka, ...		366
——— gummiferum.	erroneously supposed to yield opoponax, ...	.. ..		366
Galbanum officinale. *Pentand. Digyn.*	gum resin, less powerful but similar to asafœtida, ..	Country uncertain, ...		367
Cuminum Cyminum. *Pentand. Digyn.*	stimulating plasters,..	Upper Egypt, and Ethiopia, ...		367
Thapsia villosa. *Pentand. Digyn.* ..	acrid and corrosive, ...	Hills and thickets in Spain, Portugal, South of France, ..		367
——— Silphium.	in high estimation among the ancients as a remedy for blindness, ...	Mountains of Cyrene, ...		368
Laserpitium glabrum. *Pentand. Digyn.*	a violent purgative,..	Mountains of Europe, ...		368
Daucus Carota.* *Pentand. Digyn.* ..	*carrot*, poultices of the root used for correcting fœtid discharge from sores, ...	Europe, cultivated in Bengal, ..		368
Anthriscus sylvestris. *Pentand. Digyn.*	deemed similar to, but less powerful than hemlock,.. ..	Europe, ...		368
——— vulgaris...	poisonous, ...	Common European weed, ...		368
Cachrys odontalgica. *Pentand. Digyn.*	excites salivation, used for toothache,	Siberia, Crimea, Caucasus, ...		369
Prangos pabularia. *Pentand. Digyn.* ..	excellent fodder for cattle, ...	North of India, near Draz, ...		369
Conium maculatum. *Pentand. Digyn.*	*spotted hemlock*, powerful narcotic poison, ...	Europe, East of Asia, and America, ..		369

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Smyrnium Olusatrum. *Pentand. Digyn.*	stimulant and stomachic, ...	Wet places in Europe, ...		371
Coriandum sativum.* *Pentand. Digyn.*	*Coriander*, seeds carminative, aromatic, ...	Levant, Tartary, South of Europe, cultivated in all parts of India, ..		371

NAT. ORDER LXXII.—ARALIACEÆ.

Aralia nudicaulis. *Pentand. Digyn.* ..	the effects said to be equal to those of sarsaparilla, ..	North America, ...		372
Hedera Helix. *Pentand. Digyn.* ..	*ivy*, berries are nauseous, bitter, and aperient, ...	Europe and high lands of Asia, ..		372
Panax quinquefolius, *Pentand. Digyn.*	*ginseng*, abounds in gum and starch, and a little resin and essential oil, ...	China, Canada, ...		373
—— Pseudo-ginseng.	similar, ...	Nipal, ...		374

NAT. ORDER LXXIII.—CORNEÆ.

Cornus florida. *Tetrand. Monog.* ..	tonic, astringent and antiseptic, ...	Moist forests in the United States, ..		374
—— sericea.	substitute for Peruvian bark, ..	Moist woods in the United States, ..		374
—— suecica.	tonic, ...	High lands of Sweden and Norway, ..		375
—— mascula.	bark useful in intermittent fevers, ..	Europe, ...		374
—— sanguinea.	oil a good substitute for olive oil, ..	Europe, ...		375
—— oblonga.*	similar, ...	Deyra Doon, ...		375

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Cornus macrophylla.*	yields oil, ...	Mussooree, ...		375
—— nervosa.	do.			
—— capitata.	fruit eaten in the hills, ...	Do.		375

NAT. ORDER LXXIV.—LORANTHACEÆ.

Viscum. *Dioecia. Tetrand.* . ..	Mistletoe of the Druids,..	That which grows on the Nux-vomica tree is poisonous with the supporting tree, ..		375
Loranthus. *Hexand. Monogyn.*		... .		375

NAT. ORDER LXXV.—CAPRIFOLIACEÆ.

Triosteum perfoliatum. *Pentand. Monog.*	root emetic and purgative, leaves diaphoretic, ..	United States,..		377
———— himalayanum	probably the same,..	Nipal, ...		377
Sambucus Ebulus. *Pentand. Trigyn.*	deemed cathartic, ...	Europe, ...		377
———— nigra.	*common elder*, juice of the fruit said to be cooling, laxative, and diuretic, ...	bark purgative and emetic, flowers diaphoretic and expectorant,..		377
———— adnata.	do.	Himalayas, ...		377

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Rubia tinctorum. *Tetrand. Monog.* ..	madder, ...	.. ..		378
—— *Munjista.*	roots used for colouring ointments, ..	South of Europe, Levant, Asia Minor, cultivated in India and Europe, ...		378
Asperula odorata. *Tetrand. Monog.* ..	deemed diuretic, ...	woods throughout Europe, ...		379
Galium verum. *Tetrand. Monog* ..	yellow dye, ...	.. ..		379
Cephaelis Ipecachuana. *Pentand. Monog.*	powerful and useful sudorific, &c. &c.	New Granada, in Brazil, ...		379
Psychotria emetica. *Pentand. Monog.*	similar, ...	Do. do.		382
Richardsonia brasiliensis. *Hexand. Monog.*	little employed, but emetic, ..	Do. do.		382
TRIBE—CINCHONEÆ.				
Cinchona cordifolia. *Pentand. Monog.* ———— lancifolia. .. ———— oblongifolia. ..	*True Cinchona Barks.* afford quinine, and cinchonine, ..	Europe and America, ...		387
(and other species.)	*False Cinchona Barks.*			
Exostemma caribæum. *Pentand. Monog.*	bark is febrifuge and emetic, ..	West India Islands and Mexico, ..		393
———— floribundum.	similar, purgative also, ...	West Indies among woods, ...		393
———— Souzanum.	excessively bitter, ...	Brazil, ...		393
———— peruvianum.	febrifuge, emetic, and purgative, ..	Lower parts of Peru, ...		393
Hymenodictyon excelsum. *Pentand. Monog.*	very bitter and astringent, used by tanners, and in medicine, among the Hindoos,	Mountainous parts of the Circars of India, ...		394
Uncaria Gambir. *Pentand. Monog.* ..	rich in tannic acid, ...	Islands of the Indian Archipelago, and cultivated in the Calcutta Garden, ...		398
Randia dumetorum.* *Pentand. Monog.*	alleged emetic, ...	Coromandel and Bengal, ...		399

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Gardenia turgida.* *Pentand. Monog.* ..	no positive results obtained, ..	Coromandel and Bengal, ...		400
——— campanulata.	stated to be used as a cathartic and anthelmintic by the natives, and also to wash out stains in silk, ...	Do. do.		400
Posoqueria uliginosa.* *Pentand. Monog.*	no positive results obtained, ..	Do. do.		400
Condaminea corymbosa. *Pentand. Monog.*	chiefly used for adulterating the cinchona bark, ...	Brazil, ...		400
Ophiorrhiza Mungos. *Pentand. Monog.*	high reputation as a remedy for snake bites, ...	Java, Ceylon, and Sumatra, ...		400
Oldenlandia umbellata.* *Pentand. Monog.*	red dye, native doctors consider it to be an expectorant, ..	Java, Coromandel, Mexico, ...		400
——— biflora.*		Bengal, ...		400
Pæderia fœtida.* *Pentand. Monog.* ..	leaves very fœtid and alliaceous, used in baths, given in retention of urine and in some fevers, ...	Plains and Continent of India, ..		400
Canthium parviflorum.* *Pentand. Monog.*	prescribed in India in dysentery and worm cases, common,	Through India, especially Coromandel coast, ...		401
Chiococca anguifuga. *Pentand. Monog.*	used in snake bites, ...	Cayenne, Brazil, Peru, and some of the West India islands,		401
——— densifolia.	powerful emetic and cathartic, ..	Brazil, ...		401
Coffea arabica.* *Pentand. Monog.* ..	*coffee*—stimulant, ...	Arabia, Bengal, ...		402
Palicourea Marcgraavii. *Pentand. Monog.*	poisonous, ...	Brazil, ...		402

NAT. ORDER LXXVII.—VALERIANEÆ.

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Valeriana officinalis. *Valerian.*	*Triand. [Monog.*	a valuable remedy in the atonic forms of hysteria, hypochondriasis, chlorosis, and amennhorea,	Wet places in Europe, ...		402
——— *celtica.*		esteemed in the Levant as a perfume and cosmetic, ...	Piedmont and the Tyrol, ...		403
Nardostachys Jatamansi. *Triand. Monog.*		spikenard of the ancients, medicinal qualities the same as *V. officinalis,*	Mountains of the North of India, ..		403

NAT. ORDER LXXVIII.—DIPSACEÆ.

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Dipsacus Fullonum. *Tetrand. Monog.*		fuller's thistle, Dunsakoos of the Indian materia medica, ...	North of India, ...		404

NAT. ORDER LXXIX.—SYNANTHEREÆ.

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Lactuca virosa. *Syngenes. Æqual.* ..		the inspissated juice produces symptoms like those of opium,	Europe, ...		406
——— sativa.*		Garden or Roman lettuce, affords lactucarium or thridace, a sedative and anodyne without stimulant effects, ..	Europe, Bengal, ...		406

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Taraxacum officinale. *dandelion.* *Syng. Æqual.*	tonic, diuretic, in large doses aperient,	Europe and Himalayas,	..	407
Cichorium Intybus. *Syng. Æqual.* ..	has been used in France as a substitute for coffee, ...	Europe, ...		408
Centaurea benedicta. *Syng. Frustran.*	yields carbonate of potash, ...	South of Europe, ...		409
——— Cyanus.*	fine azure colour prepared from the petals, much used by miniature painters, ...	Europe, ...		409
——— Centaurium.	bitter and aromatic, ...	common in the Alps, ...		409
——— Jacea.	bitter and astringent, ...	Europe, ...		409
——— Calcitrapa.	bitter, and asserted to be febrifuge,	Do. do.		409
——— lanata.	bitter, ...	Europe, ...		409
——— Behen.	bitter tonic, ...	abounds on Mount Lebanon, ...		409
Arctium Lappa. *Syng. Æqual.* ...	roots given in decoction as a tonic and alterative in Ireland, effects quite equal to sarsaparilla, ...	common in Europe, ...		410
Carthamus tinctorius.* *Syng. Æqual.*	red dye, Chinese card-rouge and pink saucers prepared from it,	S. Europe, Egypt, and India, particularly in Behar and Dacca,		410
Anthemis nobilis. *Syng. Superfl.* ..	*camomile,* antispasmodic and bitter tonic, ...	Europe and Persia, ...		412
——— Pyrethrum, *pellitory.* ..	determines profuse and immediate salivation, used to relieve toothache, internally as a cordial and stimulant, ..	S. Europe, Barbary, &c.		413
Artemisia Absinthium. *Syng. Superfl.*	*wormwood,* used in medicine as an extract, tincture, tonic syrup, &c.	hilly and uncultivated parts of Europe,		414

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Artemisia indica.*	substitute for the former, but weaker,	Nipal,...	414
——— *Abrotanum.**	same as the other species, ..	South of France, ...	414
——— *vulgaris.*	inferior in power, but similar to the other species, ..	Europe, ...	415
——— *Dracunculus.*	pungent, acrid, and aromatic, by some practitioners considered a powerful sudorific,..	Siberia & cultivated parts of Europe,	415
——— rupestris.	esteemed as an application to injured parts, internally supposed to be tonic and diaphoretic, ...	rocks & ravines of Auvergne, Switzerland, Siberia, &c.	415
——— Contra, ...	vermifuge, ...	Levant, Aleppo, Alexandria, Persia,..	415
——— judaica.	Indian semen-contra, ...	Judea, Arabia, Cochin-China, ..	416
——— palmata...	similar, ...	temperate climates, ...	416
——— glomerulata.	do.	Do. do.	416
——— Moxa.	cotton burns like tinder when touched by a spark or any red hot body, ...	China and Siberia, ...	416
Achillea Millefolium.* *Syng. Superfl.*	contains a bitter principle and essential oil, of little value,..	Europe, ...	418
——— Herbarota.	bitter, acrid, and aromatic, deserves experimental trial, ..	Alps of Piedmont and Dauphiny, ..	418
Tanacetum vulgare, *tansy.* *Syng. Superfl.*	used in many places for producing sweating and curing colds, ...	Europe everywhere, ...	418

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Santolina Chamæcyparissias (citronelle.)	*Syng. Æqual.*	powerful bitter and stimulant, ...	Europe, ...	418
Diotis candidissima. *Syng. Æqual.* ..		employed as a diuretic in the East,	Asia, ...	418
Inula Helenium. *Syng. Superfl.* ..		decoction, a gentle stimulant, extract, weak bitter, ..	Europe, ...	419
——— dysenterica.		astringent, ...	Europe, ...	419
Conyza anthelmintica. *Syng. Superfl.*		bitter, a worm medicine, ...	India, ...	419
——— balsamifera.		substitute for sage, ...	India, ...	419
——— *alopecuroides.*		*diuretic,*	*Martinique,*	419
Soidago *Virgaurea.* *Syng. Superfl.* ..		reputed to be astringent and diuretic,	Europe,..	420
Senecio, vulgaris. *Syng. Superfl.* ..		emollient, ...	France, ...	420
——— Jacobæa.		do.	Do.	420
Cacalia sonchifolia.* Syng. Æqual. ..		decoction deemed antifebrile, ..	Malabar coast, ...	420
——— Kleinia.*		*effects similar to sarsaparilla,* deserves trial, ...	Common in the bazar,..	420
Tussilago Farfara. *Coltsfoot.* *Syng. Superfl.*		popular remedy for cold as a sudorific, ...	Europe, ...	420
Arnica montana. *Syng. Superfl.* ..		*wolfsbane,* in small doses stimulating and astringent; in paralytic cases effects resemble those of nux-vomica; in excessive doses acrid and poisonous,	Europe, ...	421
Doronicum Pardalianches. *Syng. Superfl.*		effects resembling the last, ..	Alps, ...	422
——— plantagineum		similar, ...	Do.	422
Eupatorium cannabinum. *Syng. Æqual.*		purgative, ...	Europe, ...	422
——— Ayapana.		agreeable and useful diaphoretic and gentle tonic, ..	Brazil and Bengal, ...	422

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Eupatorium perfoliatum.	stated to be successful as an anti-periodic in fevers, ..	United States,..		423

NAT. ORDER LXXX.—CAMPANULATEÆ.

Destitute of medicinal plants of proved utility.

NAT. ORDER LXXXI.—LOBELIACEÆ.

Lobelia inflata. *Pentand. Monog.* ..	an acrid narcotic and violent emetic, in small doses diaphoretic and expectorant, a remedy of great power, ...	United States,..		423
——— syphilitica.	similar to L. inflata, ...	United States,..		424
——— longifolia.	still more potent; violent acrid poisons, ...	West Indies, ...		424
——— Tupa.		vicinity of Bangalore, ...		424
——— nicotianifolia.	stout tall species, ...	.. ..		424
——— trigona, ...	.. ..			
——— radicans.*	altogether inert, accidentally introduced from China into the Calcutta Garden, ..	China, ...		424

NAT. ORDER LXXXII.—VACCINIEÆ.

			B. D.	*Page.*
Small shrubs.	usually astringent, and rich in tannic acid, ...	Europe, ...		425

NAT. ORDER LXXXIII.—RHODORACEÆ, OR RHODODENDRA.

Kalmia latifolia. *Decand. Monog.* ..	poisonous plant, ...	Virginia and Carolina, ...		425
Rhododendron. *Decand. Monog.* ..	small doses used in chronic rheumatism, gout, and syphilis; stimulant and narcotic,	Alps, ...		425
——— ferrugineum. ..				
——— arboreum.	doubtless of similar qualities, ...	Himalayas, ...		425
——— campanulatum. ..	used by the natives as snuff, ..	Thibet,..		425
——— aromaticum. ..	highly fragrant and stimulating, ..	Cabul, ...		425
Azalea pontica. *Pentand. Monog.* ..	yields a dangerous honey, ...	Colchis and Mingrelia, ...		425
Ledum latifolium. *Decand. Monog.* ..	stomachic, ...	North America, ...		426

NAT. ORDER LXXXIV.—ERICACEÆ.

Erica vulgaris. *Octand. Monog.* ..	*common heath*, diuretic, and used in tanning leather, ..	Europe, ...		426
Andromeda polifolia. *Decand. Monog.*	used instead of gallnuts in silk factories, ...	Russia, St. Petersburgh, ...		426
Pyrola rotundifolia. *Decand. Monog.*..	astringent, ...			426

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Pyrola umbellata. *Syn. Pipsissewa.*	*winter-green*, astringent, tonic, sudorific, and diuretic, ..	from Canada to Georgia, ...			426
Arctostaphylos Uva ursi. *Decand. Monog.*	astringent and aromatic, useful in chronic gleet, catarrh of the bladder, and some kinds of gravel and diarrhœa, ..	France and Ireland, ...			426
Penæa Sarcocolla. *Tetrand. Monog.* ..	produces the substance called sarcocolla, ...	Ethiopia and Cape of Good Hope, ..			426

NAT. ORDER LXXXV.—SAPOTEÆ.

Achras Sapota.* *Hexand. Monog.* ..	*sapodilla plum*, seeds deemed to be powerfully diuretic, and bark a substitute for cinchona,	Martinique, ...			427
Bassia longifolia.* *Dodecand. Monog.*	yields a large quantity of oil, ..	India, ...			428
——— butyracea.	do.	Fulwa or Phulwara, of Nipal and Almora, ...			428
——— latifolia.*	do.				428

NAT. ORDRR LXXXVI.—EBENACEÆ.

Diospyros Embryopteris.* *Polyand. Monog.*	*(gab)* fruit a valuable astringent and styptic, ...	Bengal, around Calcutta, ..			428

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Diospyros Melanoxylon.*	ebony tree, bark astringent, ..	Coromandel, Malabar, Ceylon, Midnapore jungles, ...		428
——— virginiana.	bark said to be powerfully astringent,	United States, ...		428

NAT. ORDER LXXXVII.—STYRACINEÆ.

Styrax officinalis.* *Decand. Monog.* ..	storax tree, ...	Levant, Syria, Palestine, Greece, and the Peloponesus, ...		429
——— Benzoin.	benzoic acid, a well known stimulant and diaphoretic remedy, ingredient in paregoric elixir, court plaster, principally used in the manufacture of fumigating pastiles, and for incense, ...	Sumatra, Borneo, Siam, and Java, ..		430

NAT. ORDER LXXXVIII.—JASMINEÆ.

Olive Tribe—Oleineæ.

Olea europea.* *Diand. Monog.* ..	*olive*, produces olive oil and resin, oil much used in soaps, cerates, liniments, plasters, &c.	Spain, Italy, Sicily, coasts of the Mediterranean, Asia Minor, ..		432

			B.	D.	Page.
Olea fragrans.*	flowers evolve a delicious odour, used to perfume teas, ..	China and Japan, ...			433
Fraxinus rotundifolia. *Diand. Monog.*	manna ash tree, ...	Calabria and Sicily, ...			434
——— florifera.	*manna*, mild purgative, ...	South of Europe, ...			434
——— excelsior.	purgative, bark bitter and astringent,	Europe, ...			435
Syringa. *Diand. Monog.*	seeds said to be astringent, ...	Europe, ...			435
Ligustrum. *Diand. Monog.*	bitter and astringent leaves, coloured berries used in dyeing wines, ...	Europe, ...			435
Jasminum officinale.* *Diand. Monog.*	the only use is for the preparation of perfumed oil, ..	Europe and Asia, ...			436
Nyctanthes arbor tristis (*Hursinghar.*)* *Diand. Monog.*	known for the evanescent delicious perfume of its flowers, . .	Bengal, ...			436

NAT. ORDER LXXXIX.—STRYCHNEÆ.

Strychnos Nux-vomica.* *Pentand. Monog.*	most formidable poison, and valuable remedy in paralysis, rheumatism, neuralgia, intermittent fever, &c, &c. ..	India and Eastern Islands, ...			436
——— Sancti Ignatii.	the *papeeta nut*, contains strychnine, purges in small doses, considered to be an efficacious vermifuge, ...	Philippine Islands, ...			441

			B. D.	*Page.*
Strychnos colubrina.	root deemed a powerful remedy for the bite of the cobra capella, ...	Malabar and Ceylon, ...		442
—— potatorum.*	destitute of poisonous properties, nut used for clearing water,	Bengal,..		443
—— toxifera.	basis of the celebrated Woorara poison, ...	Guiana, ...		443
—— Tieute.	exceedingly violent poison,... ..	Java, ...		443
—— ligustrina.	yields the *lignum colubrinum, cobra wood,* of Timor, ..	Malayan Archipelago,..		443
—— Pseudoquina.	universally employed instead of cinchona, ...	Brazil, ...		444
Carissa Carandas.* *Pentand. Monog.*..	destitute of poisonous qualities, affords the well known caranda jelly, ...	Bengal, ...		444

NAT. ORDER XC.—APOCYNEÆ.

Nerium Oleander. *Pentand. Monog.*..	a remedy in herpes and itch, ..	warm parts of Europe, Asia Minor, lower Himalayas, gardens in Bengal,..		445
—— odorum.*	bark and leaves used by native Indian practitioners as powerful repellents applied externally, root very poisonous,	common in the gardens of India, ..		445

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Nerium piscidium.	contains a narcotic principle; used for its tough fibres, ..	Sylhet, Ceylon, ...	445
Wrightia antidysenterica.* *Pentand. Monog.*	bark astringent and bitter, deemed febrifuge, seeds bitter, used internally as a vermifuge, ...	coast of Malabar, Ceylon, Isle of France, and many parts of India, ...	446
——— tinctoria.*	leaves yield the finest indigo, ..	Bengal, ...	446
Cerbera Tanghin.* *Pentand. Monog.* ..	kernel of the nut said to be a formidable poison, ...	Madagascar.	446
——— Manghas.*	kernels emetic and purgative, deserves attention, ...	East Indies, ...	447
——— Ahovai.	do. do.	Do.	447
——— Thevetia.*	milk poisonous, bark bitter and purgative, also said to be powerfully febrifuge, ..	perfectly naturalized in India, ...	447
Ophioxylon serpentinum.* *Pentand. Monog.*	roots used as a febrifuge, as an antidote to snake poison, and to promote delivery in tedious cases, ...	various parts of India, ...	447
Alyxia stellata.* *Pentand. Monog.* ..	contains benzoic acid, used in Germany in chronic diarrhœa and nervous disorders, ..	Malay Archipelago, Society and Friendly Isles, ...	448
Willoughbeia edulis.* *Pentand. Monog.*	every part on being wounded discharges fluid caoutchouc, ..	Forests of Chittagong and Sylhet, ..	448
Allamanda cathartica.* *Pentand. Monog.*	a valuable cathartic, in too large doses violently emetic, and drastic, ...	Cayenne, Guiana, and coasts of Brazil, Calcutta Garden, ..	448

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Vinca pusilla.* *Pentand. Monog.* ..	applied in India as an external stimulant in lumbago, ..	East Indies, ...		448
Apocynum androsæmifolium. *Pentand. Monog.*	when fresh emetic, dried tonic,	United States, ...		448
———— cannabinum.	also emetic, decoction diuretic and diaphoretic, ...	do. do.		448
Ichnocarpus frutescens.* *Pentand. Monog.*	sometimes used in India as a substitute for sarsaparilla, ..	Ceylon, ...		449
Hasseltia arborea. *Pentand. Monog.* ..	milk mixed with honey a powerful drastic in tape worm, ..	Java, ...		449
Vahea gummifera. *Pentand. Monog.* ..	yields caoutchouc, ...	Madagascar, ...		449
Urceola elastia. *Pentand. Monog.* ..	yields caoutchouc in abundance, ..	Sumatra and Pulo Penang, ...		449
Plumieria. *Pentand. Monog.*	several species, used as drastic cathartics, ...	Jamaica, Surinam, Brazil, Malayan Archipelago, and Cochin China, ...		449
———— acuminata.*	abundant in the Pinjore valley, ..	.. ..		449
Cameraria latifolia. *Pentand. Monog.*	yields great abundance of milk reputed to be very poisonous,	Jamaica, Cuba, St. Domingo, ..		449
Tabernaemontana utilis. *Pentand. Monog.*	milk harmless, ...	Demerara, ...		449
Holarrhena pubescens.* *Pentand. Monog.* ———— antidysenterica.* ..	yield the Indurjuo tulk of the bazar,	Bengal, ...		449

NAT. ORDER XCI.—ASCLEPIADEÆ.

Cynanchum monspeliacum. *Pentand. Digyn.*	Montpelier or French scammony,	South of France, ...		450
———— Argel.	leaves purgative, much used for adulterating senna, ...	Upper Egypt, ...		450

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Aynanchum Ipecachuana.	emetic, ...	Mauritius, ...		451
——— Vincetoxicum.	root emetic, and said to be purgative; also a supposed antidote to poisons, ...	Sandy places in Europe, ...		451
——— ovalifolium.	yields abundance of fine caoutchouc,	Penang, ...		451
Secamone emetica. *Pentand. Digyn.* ..	roots acrid and emetic, ...	Southern parts of the peninsula of India at the base of mountains, ...		451
——— Alpini.	a drastic purgative, ...	Europe, ...		451
Periploca græca.* *Pentand. Digyn.* ..	rather violent poison, ...	Europe, ...		452
——— esculenta.	said to be eaten by the natives, ..	Continent of India, ...		452
——— Mauritiana.	thought to yield the false ipecachuana of Bourbon, ..	Mauritius, ...		452
Asclepias tuberosa. *Pentand. Digyn.* ..	root expectorant and diaphoretic, used in catarrh, inflammation of the lungs, and pleura, ..	United States, ...		452
——— decumbens.	similar properties, ...	Do.		452
——— curassavica.*	emetic, roots purgative, used in fluor albus and gleet, ..	West Indies and tropical parts of America, ...		452
Calotropis gigantea.* *Pentand. Digyn.*	*mudar*, emetic, diaphoretic, alterative, and purgative; one of the best substitutes for ipecachuana,	Common in every part of India, ..		453
——— procera, ...	juice extremely acrid, used to remove hair from the skin, and as an external remedy in ringworm and other cutaneous diseases, ...	Persia and Arabia, ...		454

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Calotropis Hamiltonii.* .. .. *(According to Dr. Wallich the same as C. procera.)*	properties similar to those of the C. gigantea, ...	Some parts of Bengal, and most of Western Provinces. Extensively cultivated in the H. C. Botanic Garden, ...		454
Hoya viridiflora.* *Pentand. Digyn.* ..	leaves with oil form a popular cataplasm, applied by the natives to boils; roots and young shoots alterative, ..	Coromandel, Sylhet, Neilgherries, ..		454
Tylophora asthmatica.* *Pentand. Digyn.*	dried roots of great value as a substitute for ipecachuana, ..	Common in Bengal, ...		455
Sarcostemma glaucum. *Pentand. Digyn.*	used in Venezuela instead of ipecachuana, ...	South America, ...		455
Hemidesmus indicus.* *Pentand. Digyn.*	diuretic, diaphoretic, and tonic, substitute for sarsaparilla, and its activity more decided, ..	Common all over the Indian peninsula,		456
Oxystelma esculentum.* *Pentand. Digyn.*	used by the natives as a gargle in apthous ulcerations of the mouth and sore throat, ..	Common in India on the banks of nullahs, ...		457

NAT. ORDER XCII.—GENTIANEÆ.

Menyanthes trifoliata. *Pentand. Monog.*	powerful bitter tonic and febrifuge,	Europe and N. America, ...		457
Spigelia marylandica. *Pentand. Digyn.*	taken internally causes vertigo and intoxication, root celebrated as a vermifuge, especially in cases of ascarides; large doses often purgative and emetic; recommended in irregular remittent fevers, ..	South America, ...		457

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Chironia Centaurium. *Pentand. Monog.*	very valuable where indigenous as a tonic, vermifuge, and antiperiodic in the treatment of mild agues, ...	European meadows and pasturages, ..	457
——— centauroides.*	another powerfully bitter species, ..	India, ...	461
Gentiana lutea. *Pentand. Monog.* ..	gentian, bitter tonic, ...	Mountains of Europe,..	458
——— Kurroo.	roots used like the gentian in the north of India, ...	Mussoorie, Simlah, &c.	459
Agathotes Chirayta. *Pentand. Monog.*	highly esteemed as a tonic and febrifuge all over India, ..	Bengal,..	459
Ophelia angustifolia. *Pentand. Monog.*	substituted for the above, ...	Mountains of Bengal, ...	460
Exacum tetragonum.* *Tetrand. Monog.*	similar, named Ooda chiretta, or purple chiretta, ...	Do.	460
Frasera Walteri. *Tetrand. Monog.* ..	fresh, emetic and cathartic; dry, bitter, and tonic, ...	North America, ...	460
Cicendia hyssopifolia. *Tetrand. Monog.*	bitter, used by the natives as a stomachic, also laxative, ..	East Indies, ...	460
Chlora perfoliata, *Octand. Monog.* ..	similar but weaker properties, ..	Europe, ...	460
Sabbatia angularis. *Pentand. Monog.*..	excellent simple bitters, ...	United States,..	460
——— gracilis.			
Lisianthus pendulus. *Pentand. Monog*	do.	Brazil, ...	460
Coutoubea spicata. *Tetrand. Monog.* ..	do.	Guiana, ...	460
——— racemosa.			
Villarsia nymphæoides. *Pentand. Monog.*	do.	Europe, ...	460

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Solanum tuberosum.* *Pentand. Monog.*	*potatoe,* wild state bitter and acrid,	South America, ... 462
——— Dulcamara.	acrid narcotic, and poisonous, ..	temperate climates, and Choor mountain, ... 462
——— nigrum.*...	employed as a narcotic by the Hakeems, ...	Waste places in most countries, .. 462
——— Lycopersicon.*	*tomata* or *love-apple,* used in sauces,	cultivated generally, ... 463
——— Melongena.*	innocent, and insipid, ...	cultivated every where in India and Cashmere, ... 463
——— ovigerum.	*egg plant,* fruit stated to be narcotic,	Bengal, ... 463
——— pseudoquina.	has a bitter ingredient resembling colocynth, as yet but imperfectly studied, ..	Brazil,.. 463
——— paniculatum, ...	diuretic—ripe fruits celebrated in the treatment of hepatic and visceral obstructions, and in catarrh of the bladder, ..	Brazil, ... 463
——— baccatum, ——— mammosum, ...	regarded as powerful diuretics, ..	Brazil, ... 463
——— cernuum, ...	powerful and valuable sudorific in gonorrhœa and syphilis,...	Brazil, ... 463
Atropa Belladonna. *Pentand Monog.*	*deadly nightshade,* its uses almost limited to its external application; its uniform and remarkable effect in dilating the iris renders it of great value to the oculist, ..	waste places and ruins in Europe, .. 464

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Atropa acuminata. *(mandrake,)* ..	of identical properties with the above, ...	Kunawar, on the northern face of the Himalayas, ...	466
Nicandra physaloides.* *Pentand. Monog.*	said to be diuretic, ...	Bengal, ...	466
Physalis somnifera. *Pentand. Monog.*..	supposed to be narcotic and diuretic, ...	Rocky places on the sea coast of the South of Europe and the East,..	466
—— Alkekengi.	berries purgative and diuretic, used in veterinary practice,	Europe, ...	467
Capsicum annuum.* *Pentand. Monog.*	strong stimulant, useful in elongated uvula and sore throats,	South America, Mexico, East Indies,..	467
—— frutescens.*	similar properties, but more powerful,	Cultivated in Bengal,..	468
Datura Stramonium. *Pentand. Monog.*	the narcotic properties identical with those of belladonna and hyoscyamus, ...	waste places all over Europe,.. ..	468
——— Tatula.	nearly the same as D. stramonium,	North America, ...	469
——— fastuosa.*	seeds frequently used as a poison, ..	good substitute for belladonna in many cases, common over the peninsula of India, ..	469
Hyoscyamus niger.* *Pentand. Monog.*	*Henbane,* its action intermediate between belladonna and opium,	Europe and Asia Minor, ...	470
Nicotiana Tabacum.* *Pentand. Monog.*	*Tobacco ;* a vegetable alkali called Nicotina, (a virulent poison) and a concrete oil called Nicotianin, are extracted from it, ...	warm parts of America, ...	471
——— persica.	gives the esteemed tobacco of Turkey and Syria,.. ..	Persia, ...	473

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Crescentia Cujete.* *Didyn. Angiosp.* ..	from the pulp and fruit a syrup is prepared used as a pectoral medicine, leaves as a poultice for bruises and inflammations, ...	West Indies, ...	473
Cestrum venenatum. *Pentand. Monog.*	decoction of the bark used by the Hottentots to poison their missiles, and to destroy wild beasts, ...	Cape of Good Hope, Houtniqua land &c.	473

NAT. ORDER XCIV.—SCROPHULARINEÆ.

Scrophularia nodosa. *Didyn. Angiosp.*	now known to be quite useless, ..	Europe, ...	474
Digitalis purpurea. *Didyn. Angiosp.* ..	*purple foxglove*, leaves most extensively employed in medicine as a sedative and diuretic, in large doses vomiting, purging, and deadly collapse are induced, ...	common plant by road sides and waste places in Europe, ..	474
Herpestis Monnieria.* *Didyn. Angiosp.*	the natives use the juice mixed with petroleum as a local remedy in rheumatism, ..	Native of tropical countries, ...	476
——— amara.	leaves excessively bitter, ...	Moluccas, ...	476
Gratiola officinalis. *Diand. Monog.* ..	*hedge hyssop*, bitter cathartic and emetic, also diuretic and a violent poison, ...	Europe, ...	476

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Scoparia dulcis.* *Tetrand. Monog.* ..	mucilaginous, laxative, by some thought febrifuge, ...	Spanish America, ...		476
Verbascum nigrum. *Pentand. Monog.*	supposed to be narcotic, ...	Europe, ...		477
——— Thapsus.*				
Calceolaria trifida. *Diand. Monog.* ..	tonic febrifuge, ...	Peru, ...		477
——— pinnata.*	emetic and purgative, ...	Peru, ...		477
Linaria vulgaris. *Didyn. Angiosp.* ..	bitter, supposed to be purgative and diuretic, employed as a lotion for some cutaneous diseases, ...	Europe, ...		477
——— Cymbalaria.	warm and rather aromatic, given with sugar for the cure of diabetes, ...	Europe, ...		477
Vandellia diffusa. *Didyn. Angiosp.* ..	considered of great value as an emetic and febrifuge, ..	Isle of France, Brazil, Yuagana, ..		477
Torenia asiatica.* *Didyn. Angiosp.* ..	juice of the leaves a remedy for gonorrhœa, ...	Malabar, ...		477
Picrorrhiza Kurrooa. *Didyn. Angiosp.*	root intensely bitter, and used as a tonic medicine in India,	Gosainthan, Kemaon, Kedarkanta, ..		478
Euphrasia officinalis. *Didyn. Angiosp.*	*eye-bright*, slightly bitter and aromatic, once celebrated as an application for weak eyes, now seldom or never employed, ...	Europe, the Himalayas, & Cashmere,		478

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Veronica Beccabunga. *Diand. Monog.*	popular remedy in coughs, chronic visceral affections, and dyspepsia, now seldom employed, ...	Europe, ...		478
——— officinalis.	similar plant, ...	Europe, ...		478

NAT. ORDER XCV.—CYRTANDRACEÆ.

Didymocarpus aromaticus. *Diand. Monog.*	perfume and aromatic drug, ..	Bengal, ...		478

NAT. ORDER XCVI.—PEDALINEÆ.

Sesamum orientale.* *Didyn. Angiosp.*	the oil equal to the best olive oil, ..	cultivated in the East, ...		479
Pedalium Murex. *Didyn. Angiosp.* ..	a watery infusion sweetened with sugar a favourite and excellent native demulcent in acute gonorrhœa, ...	grows generally in India, but chiefly on the Coromandel Coast, ..		480

NAT. ORDER XCVII.—BIGNONIACEÆ.

Bignonia antisyphilitica. *Didyn. Angiosp.*	bark of the younger branches considered one of the most powerful remedies against malignant, syphilitic swellings, ...	Brazil, ...		480

NAT. ORDER XCVIII.—ACANTHACEÆ.

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Rhinacanthus communis.* *Diand. Monog.*	milk boiled with roots is deemed aphrodisiac; with lime juice and pepper given in ringworm, also for the bites of venomous snakes, ..	continent of India, ...		481
*Justicia Ecbolium.** *Diand. Monog.* ..	said to be diuretic, ...	Indian forests,..		482
——— pectoralis.	stomachic, ...	Do.		482
——— biflora.	emollient, leaves used for poultices,	Do.		482
Acanthus mollis. Didyn. Angiosp. ..				
Andrographis paniculata.* (Creat) [*Diand. Monog.*	celebrated as a stomachic bitter; used in cholera, and dysentery; native of dry ground under the shade of trees, ..	India generally, ...		482
Gendarussa vulgaris.* *Diand. Monog.*	roasted leaves given in chronic rheumatism by native practitioners, plant said to be emetic, common in the gardens of India, ...	supposed native of the Malay Islands,		483
Adhatoda Vasica.* *Diand. Monog.* ..	bitterish, and slightly aromatic, supposed to be antispasmodic,	Bengal,...		483

NAT. ORDER XCIX.—VERBENACEÆ.

Verbena officinalis. *Didyn. Angiosp.* ..	described as astringent, febrifuge, &c. but has fallen into just neglect,..	warm parts of Europe, ...		484

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Verbena jamaicensis.	juice used as a cooling purgative for children, ...	French West India Islands, ...		484
Vitex trifolia.* *Didyn. Angiosp.* ..	leaves deemed a powerful external application in rheumatism, sprains, &c., powdered leaves said to cure intermittent fevers, fruit given for amenorrhea, &c.	India, ...		484
—— Agnus castus.*	stimulating—powdered seeds strewed over a sliced onion and applied to the stomach a popular remedy in colic, ..	Smyrna, ...		485
—— Negundo.*	medicinal qualities similar, but weaker than the preceding species, fruit considered vermifuge in Behar, ...	India, ...		485
Gmelina asiatica.* *Didyn. Angiosp.* ..	mucilaginous and demulcent, ..	Coromandel Coast, ...		486
—— parviflora.*	do. do.	Bengal, ...		486
Callicarpa lanata.* *Tetrand. Monog.* ..	bitterish and rather aromatic, ..	Do.		486
Congea villosa. *Didyn. Angiosp.* ..	leaves have a heavy smell, are used by the natives in medicine,	Do.		486
Premna integrifolia.* *Didyn. Angiosp.*	cordial and stomachic, ...	Do.		486
Volkameria inermis.* *Didyn. Angiosp.*	juice of the root and leaves bitter, and given as an alterative in venereal and scrofula, ..	Common plant in the Jungles, ..		486

		B.	D.	*Page.*
Salvia officinalis. *Diand. Monog.* ..	*Sage*, slightly aromatic, somewhat bitter and very hot, ..	Europe, slightly astringent, ...		487
—— bengalensis.*	much stronger than the last, ..	Bengal and Coromandel, ...		487
—— amarissima.	excessively bitter, ...	Europe, ...		488
Rosmarinus officinalis.* *Diand. Monog.*	*Rosemary*, in many properties similar to the last, ...	Europe and Asia Minor, ...		488
Teucrium Chamædrys. *Didyn. Gymnosp.*	more bitter than the preceding,..	European thickets, ...		488
Hyssopus officinalis.* *Didyn. Gymnosp.*	*Hyssop*, the Arabians place it among their anthelmintics and stimulants, ...	Syria, cultivated in the Calcutta Garden,		488
Lavandula vera (Lavender.)* *Didyn. Gymnosp.*	yields an agreeable aromatic oil,	Europe, ...		488
—— Spica do.	yields the oil called by porcelain painters—oil of spike,	Europe, ...		489
—— Stœchas.	much prized as an expectorant and antispasmodic, ..	Arabia,..		
Mentha piperita. *Didyn. Gymnosp.* ..	*Peppermint*, essential oil a valuable stimulant, especially useful in flatulent diseases and in the early stages of malignant cholera, ...	Europe, ...		489
—— sativa.*	prescribed by the Mahomedans in dyspeptic complaints and to stop vomiting, ..	Europe, ...		489

			B. D.	*Page.*
Mentha viridis.	cultivated for its essential oil and distilled water, ..	Cashmere, ...		489
——— Royleana.	much used by the hill people of the Himalayas, ...	Himalayas, ...		489
——— arvensis.	field mint, ...	Europe, ...		490
——— hirsuta.	hairy or water mint, reputed to be diuretic; an ingredient in the "thieves vinegar," "baume tranquille," &c. ..	Europe, ...		490
——— pulegium.	Pennyroyal, distilled water used as a vehicle for medicines for children, flatulent colics—a popular emmenagogue, ..	Europe, ...		490
——— rotundifolia.	used as a rubefacient, said to be anthelmintic, ...	Europe, ...		490
——— rubra.	abounds in essential oil, best substitute for peppermint, ..	.. ..		490
——— sylvestris.	less powerful than the preceding, ..	.. ..		490
Glechoma hederacea. *Didyn. Gymnosp.*	ground ivy; has had a great reputation in the treatment of pulmonary complaints, ..	Europe, ...		490
Lamium album. *Didyn Gymnosp.* ..	white nettle, altogether inert, ..	Europe, ...		490
Betonica officinalis. *Didyn. Gymnosp.*..	dried leaves in powder cause sneezing, roots once deemed emetic, but this supposition is disproved, ...	Europe, ...		490

			B. D. *Page.*
Marrubium vulgare. *Didyn. Gymnosp.*	Horehound, a very celebrated popular remedy for colds, consumption, and such diseases; said also to be febrifuge and emmenagogue, ..	Europe, ...	490
Origanum vulgare. *Didyn. Gymnosp.*	similar in their properties to mint,	Europe, ...	490
——— Dictamnus.			
——— creticum.	its virtues have been celebrated by Pliny, Theophrastus, and Dioscorides, ...	Mount Ida, ...	491
——— Majorana.*	marjoram, ...	cultivated in some parts of lower India,	491
Thymus vulgaris. *Didyn. Gymnosp.* ..	yields a volatile oil, much used by Europeans for seasoning food,	Europe, ...	491
——— Serpyllum.	do.	Do.	491
Plectranthus cordifolius.* *Didyn. Gymnosp.*	very aromatic,..	Bengal, ...	491
Coleus barbatus.* *Didyn. Gymnosp.* ..			
Meriandra strobilifera. *Didyn. Gymnosp.*	substitute for sage, ...	Bengal, ...	491
Roylea elegans.* *Didyn. Gymnosp.* ..	deemed a febrifuge by the hill people,	Himalayas, ...	492
Anisomeles malabarica.* *Didyn. Gymnosp.*	ague patients inhale the vapour from an infusion to cause copious sweating, leaves in infusion give in the later stages of dysentery and intermittent fevers, entire plant deemed emmenagogue in the East Indies,..	Malabar, ...	492

			B. D.	*Page.*
Ocymum Basilicum.* *Didyn. Gymnosp.*	sweet basil; small seeds deemed cooling, mucilaginous; given in gonorrhœa, ardor urinæ, and affections of the kidneys,	Bengal, ...		492
—— pilosum.*	seeds aromatic, used by women to relieve after-pains, ..	Upper India, ...		493
—— sanctum.* *(tulsí)*	root is given in decoction in fevers,	Bengal, ...		493
—— hirsutum.*	slightly aromatic, prescribed by the Hindoos in decoction in the bowel complaints of teething children, ...	Bengal, ...		493
—— album.*	white basil; juice given to children in colds, ...	Bengal, ...		493
Pucha Pat.* *Didyn. ? Gymnosp. ?* ..	a favourite perfume, & an ingredient in tobacco for smoking,	Penang, ...		493

NAT. ORDER CI.—BORAGINEÆ.

Borago officinalis.* *Pentand. Monog.* ..	Borage, mucilaginous and watery, now obsolete, ...	Europe, ...		495
Anchusa italica. *Pentand. Monog.* ..	simply emollient, mucilaginous, and perhaps slightly diuretic,	Do.		495
—— tinctoria.	extensively used in dyeing, ..	Europe, ...		495
Cynoglossum officinale. *Pentand. Monog.*	no medicinal importance, ...	Do.		496

			B. D.	*Page.*
Symphytum officinale. *Pentand. Monog.*	highly mucilaginous, and rather astringent, celebrated in France in cases of ruptures and bruises, ...	Europe, ...		496
Heliotropium indicum.* *Pentand. Monog.*	juice of the leaves applied to painful gum-boils, and to repel pimples on the face,	Bengal, ...		496
——— peruvianum.	odour of vanilla, ...	Peru, ...		497
——— grandiflorum... ..	odour of honey, ...	Europe, ...		497
——— europeum.	commonly supposed to destroy warts,	Do.		497
Pulmonaria officinalis. *Pentand. Monog.* ——— angustifolia.	used in popular cough medicines on account of the supposed resemblance between the white spots on the leaves and ulcerated lungs, ...	Do.		497
Lithospermum officinale. *Pentand. Monog.*	popularly used as a remedy for stone, ...	Do.		497

NAT. ORDER CII.—CORDIACEÆ.

Cordia latifolia.* *Pentand. Monog.* ..	astringent, ...	confined to the southern parts of India,		497
——— Myxa.*	fruit used as a medicine, bark deemed a mild tonic, and a remedy in ringworm, ..	India, Persia, Arabia, Egypt, ...		498
——— angustifolia.	used for making astringent gargles,	in Java used in gonorrhœa and ardor urinæ, ...		499

NAT. ORDER CIII.—CONVOLVULACEÆ.

			B. D.	*Page.*
Argyreia bracteata.* *Pentand. Monog.*	decoction of the leaves used in fomentations to the joints in scrofulous affections, ...	common near Madras, ...		499
——— speciosa.*	.. ..	found wild in the Dhoon, ...		499
Convolvulus Scammonia. *Pentand. Monog.*	scammony, produces one of our most valuable cathartics, especially for children, ..	Syria and the Levant, ...		500
——— scoparius.	yields an essential oil, of rose-like odour, and bitter and balsamic taste, ...	Canary Islands, ...		501
——— sepium, ...	believed to be purgative, ...	common in Europe, ...		501
——— arvensis.*	do.	do.		502
——— Soldanella.	roots contain purgative resin, ..	do.		502
——— althæoides.	.. ..	South of France, ...		502
——— Batatas.*	sweet potatoe, ...	Bengal, ...		502
——— grandiflorus.	seeds used in snake bites, ...	Coromandel Coast, ...		506
——— reptans.*	affords a milky juice nearly equal to scammony in purgative efficacy, ...	common in India, ...		506
——— malabaricus.	considered by the farriers in India a good horse medicine,	Malabar coast, Cochin China, ..		506
Ipomæa Jalapa. *(Jalap) Pentand. Monog.*	a brisk cathartic, ...	South America, Xalapa, and Eastern declivity of the Mexican Andes, ...		502

			B. D.	*Page.*
Ipomæa Mechoacanha.	purgative properties comparatively trifling, ...	temperate parts of Oaxaca, ...		503
——— Turpethum.*	action cathartic, but uncertain, ..	Bengal, Ceylon, and India generally,		504
Batatas paniculata.* *Pentand. Monog.*	the large tuberous root is cathartic,	East Indies generally, ...		505
Pharbitis cœrulea. (*Kaladana seeds*) *Pentand. Monog.*	a quick, safe, and pleasant cathartic,	common all over the tropics,		505

NAT. ORDER CIV.—HYDROLACEÆ.

Hydrolea zeylanica.* *Pentand. Digyn.*	leaves used as a poultice for cleaning ulcers, ...	water and marshy ground in East Indies, ...		507

NAT. ORDER CV.—PRIMULACEÆ.

Cyclamen hederæfolium. *Pentand. Monog.*	drastic purgative, little used, ..	common in Europe, ...		507
Primula veris. *Pentand. Monog.* ..	flowers possess well marked sedative properties, ...	European pastures and India, ..		507
Anagallis arvensis.* *Pentand. Monog.*	an acrid drastic cathartic, now disused, ...	common in Europe and India, ..		507

NAT. ORDER CVI.—GLOBULARIACEÆ.

Globularia Alypum. *Tetrand. Monog.*	a gentle but certain purgative, ..	South of France, ...		507

NAT. ORDER CVII.—PLUMBAGINEÆ.

			B.	D.	*Page.*
Plumbago europæa. *Pentand. Monog.*	the whole plant is very acrid, applied to the skin as a paste acts as a powerful vesicatory, a dangerous emetic given internally; the bruised root in Europe is applied to cancers, as a counter-irritant to toothache, and a remedy for itch,	South of France, ...			508
——— rosea. *(Lal chitra)** ..	the bruised bark is applied by the natives to buboes in the incipient state; acts as a vesicatory; in chronic cases and many acute diseases, it proves a cheap and effectual substitute for cantharides, ...	East Indies, ...			508
——— scandens.	nearly identical with the last, ..	Ceylon, ...			509
——— zeylanica.*					

NAT. ORDER CVIII.—PLANTAGINEÆ.

Plantago Psyllium. *Tetrand. Monog.* ..	mucilaginous, used for scouring muslins, ...	North of Europe, ...			510
——— Ispaghula.*	seeds used as an emollient, and light article of diet for convalescents, ...	India, ...			510
——— major.*	slightly bitter and astringent, ..	Europe, ...			510

NAT. ORDER CIX.—MYRSINEÆ.

			B. D.	*Page.*
Embelia Ribes.* (*Baiberung*)	*Pentand. Monog.*	berries of a pungent pepper-like taste, used as an adulteration for black pepper, also in medicine by the native physicians as a vermifuge cathartic, ..	India, ...	511
——— robusta.		similar, ...		511
Myrsine bifaria.* *Pentand. Monog.* ..		deemed cathartic, ...	India, ...	511

NAT. ORDER CX.—NYCTAGINEÆ.

Mirabilis Jalapa.* *Pentand. Monog.* ..		considered an aperient by the native doctors, ...	West Indies. Cultivated in Bengal,..	511
——— dichotoma.		reputed to possess similar properties,	Mexico, ...	512
——— longiflora.				512
Boerhaavia decumbens.	*Diand. Monog.*	stated to be emetic and astringent, .	Guiana, ...	512
——— tuberosa.		said to be emetic and purgative, ..	Persia, ...	512
——— diandra.		deemed emetic, ...	Java, ...	512
——— diffusa.*		has probably similar qualities, ..	Bengal, ...	512

NAT. ORDER CXI.—POLYGONEÆ.

Coccoloba uvifera.* *Octand. Monog.* ..		extremely astringent, affords an extract termed Jamaica kino, wood gives a red dye, ..	West India Islands, and American Coast, ...	513

		B. D.	Page.
Rheum Emodi. *Enneand. Trigyn.* ..	one of the species yielding the *rhubarb* of the hills, ..	mountains of Gosain Than, Kemaon, &c.	518
——— Webbianum.	do. do.	Gosain Than, Niti, ...	519
——— spiciforme, ...	do. do.	Northern face of the Himalayas at and beyond the Karang pass,	519
——— Moorcroftianum.	do. do.	Bootan, ...	519
——— leucorrhizum.	white rhubarb, equal in effects to the best kinds, ...	Stony places in the Kirghis desert, ..	519
——— rhaponticum.	do. do.	Borders of the Euxine sea, in the deserts between the Volga and the Yaik, also in Siberia; cultivated in France at Rheumpole, ...	520
——— undulatum.	once regarded as the real officinal plant, ...	China and Siberia, ...	520
——— caspicum.	.. ..	Stony places on lower part of Altai mountains, ...	520
——— compactum.	according to Guibourt this root nearly resembles the Chinese rhubarb, ...	Tartary and China, ...	520
——— palmatum.	this is officinal in the last London Pharmacopœia, ..	mountains of Chinese Tartary to Lake Kokonor near Thibet, cultivated in England, ..	520
——— crassinervium.	.. ..	sent from St. Petersburgh to the Chelsea Gardens, ...	520
Rumex crispus, and obtusifolius. *Hexand. Trigyn.* *docks,* have astringent roots, common weeds in Europe, ...			522

			B. D.	*Page.*
Rumex acetosa.*	*sorrel*, has a peculiarly pleasant acid flavour,..	Europe, ...	522	
——— alpinus.	*monk's rhubarb*, purgative, ..	European Alps, Crimea, & Mount Caucasus, ...	522	
Polygonum Hydropiper. *Octand. Trig.*	reputed to be a powerful diuretic, ..	wet places in Europe, ...	522	
——— Bistorta...	powerfully astringent, ...	pastures and woods in Europe, ..	522	
——— aviculare.	fruit said to be emetic and cathartic,	Behar, ...	522	
——— barbatum.*	considered diuretic at the Cape of Good Hope, ...	China, East Indies, ...	522	
——— amphibium.	used with alleged success as a substitute for sarsaparilla, ..	Germany, ...	523	
——— tinctorium.	yields a blue dye like indigo, ..	China and Japan, ...	523	
——— chinense.				
Fagopyrum esculentum.* (*buck wheat*) *Octand. Trig.*	valuable article of diet in many countries where wheat will not succeed, ...	cultivated in Europe and the Himalayas, and in all the mountainous countries north of Bengal, Oude, &c.	523	

NAT. ORDER CXII.—CHENOPODEÆ.

Chenopodium olidum. *Pentand. Digyn.*	employed as an emmenagogue and antispasmodic,.. ..	India, ...	523	
——— album, ...	used as a pot-herb, ...	common in Bengal, ...	523	
——— viride,..	do.	do.	524	

		B. D.	*Page.*
Chenopodium laciniatum.	used as a pot-herb, ...	Bengal,..	524
——— Baryosmon.	excessively fœtid, used as the C. olidum, ...	Upper Egypt, ...	524
——— Botrys.*	powerful expectorant, ...	South of Europe, Siberia & Upper India, ...	524
——— anthelminticum. ..	powerful vermifuge, ...	United States,..	524
——— ambrosioides.	used in chorea and similar nervous diseases, ...	Do.	524
Beta bengalensis.* *Pentand. Digyn.* Spinacia tetrandra. *Dioec. Pentand.* Basella.* *Pentand. Trigyn.*	articles of food cultivated by natives,	Bengal,..	524
Atriplex angustifolia. *Pentand. Digyn.*	seeds said to be emetic, ...	Europe, ...	524
——— hortensis.	do.	Tartary, ...	524
Salsola Kali. *Pentand. Digyn.* ..	yields carbonate of soda, ...	Europe and colder parts of Asia, ..	525
——— sativa.	equal to the last species, ...	Spain, ...	525
——— nudiflora.	is only used for fuel, ...	native of barren lands near the sea, ..	525
——— indica.	leaves used for food, ...	salt marshes and grounds near the sea,	525
——— Soda.	ashes highly alkaline, ...	South of Europe, Africa, and America,	525
——— Tragus.	do.	Do. do.	525
Salicornia indica. *Monand. Monog.* ..	would doubtless yields a fine and cheap carbonate of soda, common on such salt grounds as are inundated by the spring tides, ...	plentiful on the coast of Coromandel, ..	525

NAT. ORDER CXIII.—SALVADOREÆ.

			B. D. *Page.*
Salvadora persica. *Tetrand. Monog.*	promises to be a stimulant of great power, ...	Circars of India, Arabia, and the Persian Gulf, ...	526
——— indica.	leaves purgative, ...	Banks of the Jumna, and from Delhi to Saharunpoor, ...	527

NAT. ORDER CXIV.—PHYTOLACCEÆ.

Phytolacca decandra.* *Decand. Decagyn.*	emetic properties, stated to be nearly equal to ipecachuana,	North America, ...	527
——— acinosa.*	leaves eaten after boiling, ...	Nipal, ...	527

NAT. ORDER CXV.—AMARANTACEÆ.

Amarantus tenuifolius. *Monoec. Pent.*	alimentary, ...	cultivated grounds near Calcutta, ..	528
——— polygonoides.	do.	Gardens, ...	528
——— polygamus.*	garden weed, extensively cultivated,	Do.	528
——— tristis.*	held in great esteem by the natives,	Do.	528
——— viridis. ——— lividus.*	do. do.	Do.	528
——— oleraceus.*	formerly brought to table in India as a substitute for asparagus, ...	Do.	528
——— gangeticus.*	the lall sāg of Bengal, ...	Do.	528

		B. D.	*Page.*
Amarantus lanceolatus.	leaves and tender tops eaten by natives in their curries, ..	Bengal,..	528
——— atropurpureus.* ..	seeds ground into flour, ...	Hills between Mysore & Coimbatore,	528
——— spinosus.*	nearly all these species may be used as emollients for enemata, cataplasms, diluents, drinks, &c.	Gardens, ...	529
Achyranthes aspera.* *Pentand. Monog.*	given as a mild astringent in bowel complaints, ...	Bengal, ...	529

NAT. ORDER CXVI.—THYMELEÆ.

Daphne Mezereum. *Octand. Monog.*	berries are brisk but unsafe cathartics, the fresh bark used as a counter-irritant and external stimulant, dried bark given internally in small doses as a stimulant alterative, ...	Europe, ...	530
——— Laureola.	every part very acrid, ...	Europe, ...	531
——— Gnidium.	properties the same as the other species; used in France for making a depilatory and caustic ointment called Pommade a garou; macerated in vinegar makes a good blister,	Europe, ...	531

			B. D.	*Page.*
Daphne cannabina....	from the bark of this shrub the Nipal paper is made, ..	Sikkim, Nipal, Kemaon, &c....	..	531
Lagetta lintearia. *Octand. Monog.* ..	properties the same as mezereon. ..	Jamaica, Mexico, St. Domingo,	..	531
Dirca palustris. *Octand. Monog.* ..	bark acrid, cathartic, and vesicatory like the mezereon, fruit narcotic, and in action resembling stramonium, ..	United States,..		531

NAT. ORDER CXVII.—SANTALACEÆ.

Santalum myrtifolium.* *Tetrand. Monog.*	sandal wood of Malabar, ..	Malabar, ...		532
——— album.	do. continent of India, ...	Timor, ...		532
——— paniculatum.	yields a sandal wood, ...	Owyhee, on the volcano, ...		532
——— Freycinetianum. ..	sandal wood, used by cabinet-makers for various ornamental articles of furniture, powder given by native physicians in ardent remitting fevers, supposed to be sedative and cooling, is rubbed on the skin to allay the irritation of musquito bites, prickly heat, and other cutaneous disorders, ...	Sandwich Islands, ...		532

NAT. ORDER CXVIII.—PROTEACEÆ.

			B. D. *Page.*
Protea grandiflora. *Tetrand. Monog.* ..	astringent, used in diarrhœa, ..	Cape of Good Hope, ...	533
——— melliflora.	yields a saccharine liquid, employed in diseases of the chest, ...	Cape of Good Hope, ...	533

NAT. ORDER CXIX.—MYRISTICEÆ.

Myristica officinalis.* *Dioec. Monadelph.*	Nutmeg tree, chief use as a spice,...	Moluccas, ...	534
——— tomentosa.	large species, not so valuable, ..	Moluccas, ...	537
——— Otoba.	yields aromatic nuts, an acrid juice exudes from incisions in the bark, and is employed as a medicine, ...	Cayenne and Guiana,..	537

NAT. ORDER CXX.—HERNANDIACEÆ.

Hernandia sonora. *Monoec. Triand.* ..	oil and seeds purgative, ...	East and West Indies, ...	537

NAT. ORDER CXXI.—LAURINEÆ.

Laurus nobilis.* *Enneand. Monog.* ..	sweet bay, leaves are dry, odour agreeable, taste rather bitter, astringent, and aromatic, ..	south of Europe and Asia Minor, ..	538

		B. D.	*Page.*
Laurus Malabathrum.* *Syn. Cinnamomum Malbathr.*	odour resembles that of cloves, flavour aromatic and hot, ..	Malabar and Coromandel hills, mountain ranges from Sylhet to Missouri, ...	539
——— Culilawan.* *Syn. Cinnam. Culilawan.*	bark an aromatic stimulant like cassia, ...	Amboyna and Moluccas, ...	539
——— Cinnamomum.* *Syn. Cinnam. zeylanicum.*	this is the source of the true cinnamon, ...	Ceylon and Java, ...	539
——— Cassia.* *Syn. Cinnam. albiflorum.*	an inferior kind of cinnamon, ..	Malabar, Sumatra, Java, ...	543
——— Sassafras. *Syn. Sassafras officinale.*	owes its properties to the essential oil, which is yellow, highly fragrant, limpid, and acrid; effects of the bark stimulating, ...	North America, from Canada to Florida, ...	544
——— Camphora.* *Syn. Camphora officinarum.*	to this tree the camphor of European commerce is chiefly due, ...	Japan, ...	545
Ocotea Pichurim. *Enneand. Monog.* ..	the fruit is in odour, strongly resembling a mixture of pepper and camphor, taste aromatic, and slightly bitter, ..	From Silhet to Deyra Dhoon, ..	546
Caryodaphne densiflora. *Enneand. Monog.*	leaves used in infusion like tea against spasms of the bowels, and in puerperal convulsions,	Java, ...	547
Mespilodaphne pretiosa. *Enneand. Monog. Dioec. Enneand?*	inner bark and rind fragrant, resembling cinnamon and bergamot, ...	Woods near Para, ...	547

			B. D. *Page.*
Nectandra cymbarum. *Enneand. Monog.*	bark bitter, aromatic, and stomachic,	Oronoko, ...	547
——— cinnamomoides. ..	bark resembles cinnamon, ...	New Grenada, ...	547
——— Pachury major. ..	Martius assigns the pichurim beans to this plant, ...	Do.	547
——— minor.	according to Humboldt is the source of the sassafras nuts, ..	New Granada, ...	547
Oreodaphne opifera. *Enneand. Monog.*	yields a volatile oil, used as a stimulating liniment, ..	Para, ...	548
——— cupularis.	the cinnamon of the Mauritius, ..	Mauritius, ...	548
Benzoin odoriferum. *Dioec. Enneand.*	oil of the berries aromatic, bark highly stimulant and tonic,	North America, ...	548
——— Neesianum.	bark highly aromatic and tonic, twigs vermifuge, berries yield aromatic oil, ..	Nipal, ...	548
Tetranthera Roxburghii.* *Dioec. Enneand.*	wood a favourite application to bruises and wounds by the Hindoo physicians, ..	Mountains of India, ...	548

NAT. ORDER CXXII.—EUPHORBIACEÆ.

Buxus sempervirens.* *Monoec. Tetrand.*	evergreen box, chiefly important as affording the best wood for blocks for the wood engraver,	South of Europe, ...	550
Cicca disticha.* *Monoec. Tetrand.* ..	leaves sudorific, seeds cathartic, ..	Bengal, ...	551
Emblica officinalis.* *Monoec. Tetrand.*	bark strongly astringent, used for tanning and in diarrhœa,	Do.	551

		B. D.	*Page.*
Phyllanthus Niruri.* *Monoec. Monad.*	according to many writers the root is bitter, astringent, and a powerful diuretic, ..	native of the East Indies, ...	551
——— urinaria.	of similar properties, ...	East Indies and Bourbon, ...	551
——— simplex.*	fresh leaves, flowers and fruit with cummin seeds and sugar made into an electuary, and given by the natives as a remedy for gonorrhœa; leaves bruised with butter-milk to cure the itch, ...	Bengal,..	552
Flüggea virosa.* *Dioec. Pentand.* ..	bark a strong astringent, intoxicates fish, ...	Circar Mountains, ...	552
Cluytia collina.* *Monoec. Monad.* ..	bark or outer crust of capsule said to be exceedingly poisonous,	Bengal,..	552
Briedelia spinosa.* *Monoec. Monad.* ..	bark a strong astringent, said to be a vermifuge for cattle, ..	Circars and Bengal, ...	552
Croton Cascarilla. *Monoec. Monad.* ..	bark an important tonic, aromatic, and febrifuge, ...	South America, Domingo, ...	552
——— lacciferum.	a lac of very superior quality is formed on this tree in Ceylon,	Ceylon,..	553
——— Tiglium.*	croton-oil plant, the oil is an exceedingly powerful cathartic,	Bengal,..	553
——— tinctorium...	emetic and drastic,..	Europe, ...	555
——— Roxburghii.*	esteemed by the natives to be a good purgative, ...	Banks of the Jumna, ...	555
——— balsamiferum.	very aromatic, a thick balsamic juice flows from the branches,	Jamaica, ...	555

		B. D.	*Page.*
Croton sebiferum.*	seeds covered with a waxy substance used in China for making candles,..	common in the gardens of Calcutta,	555
——— thuriferum.	affords a balsamic juice like frankincense, ...	S. America, ...	555
——— sanguifluum.	furnishes a product resembling dragon's blood, ...	.. ..	555
——— coriaceum.	bark very aromatic when burned,	.. ..	555
Ricinus communis.* *Monoec. Monad.*	castor-oil plant, seeds inodorous, taste sweetish at first, afterwards acrid, very speedily rancid, yields an oil, which is an excellent purgative, ..	Bengal, ...	556
Jatropha Curcas.* *Monoec. Monad.* ..	the physic nut, a powerful cathartic,	New Andalusia, Havanna, India, ..	558
——— gossypifolia.	purgative;	America, ...	558
——— glandulosa...	do.	Arabia,..	558
——— multifida.*..	do.	America and India, ...	558
——— glauca.	yields a stimulating oil, an external counter-irritant, ..	Bengal, ...	558
——— glandulifera.*	a pale juice exudes from wounds in the bark, used by the Hindus to remove opacities or specks in the cornea,	Bengal, ...	558
Janipha Manihot.* *Monoec. Monad.*..	tapioca and moussache are the fecula of the root of this plant; cassava bread is made also from the root, ...	Cultivated in Bengal, ...	559

			B. D.	Page.
Hevea guianensis. *Monoec. Monad.* ..	the caoutchouc plant, incisions in the bark cause the discharge of this valuable article,	Guiana, ...		559
Alchornea latifolia. *Dioec. Monad.* ..	the bark derives its celebrity from having been long a reputed specific in pthisis, it is also said to be emetic, ..	Jamaica, ...		561
Caturus spiciflorus. *Dioec. Triand.* ..	flowers said to be specific in diarrhœa and similar diseases,	Europe, ...		561
Acalypha indica.* *Monoec. Monad.* ..	root bruised in water cathartic, decoction of leaves laxative,	Indian Gardens, ...		562
Tragia involucrata.* *Monoec. Triand.*	roots given by the Vaidas as alteratives in cachexia and venereal diseases, ...	Do.		562
Sapium indicum.* *Monoec. Monad.* ..	juice poisonous, seeds used for intoxicating fish, ...	Delta of Europe, ...		562
Mercurialis annua.* *Dioec. Octand.* ..	odour strong and very fœtid, unworthy of particular notice, ...	Europe, ...		562
Hippomane Mancinella. *Monoec Monad.*	all parts of this tree discharge, on being punctured, abundance of very white caustic and poisonous juice; this acts as an immediate vesicatory, and is used by the Indians to poison their arrows, ...	South America, ...		562

		B. D.	*Page.*
Excœcaria Agallocha.* *Dioec. Triand.*	a question has arisen whether this tree is the source of the "aloes wood" of the Greeks and Arabs, ...	East Indies, ...	562
Euphorbia Tirucalli.* *Dodec. Trig.* ..	the inspissated milk a violent emetic and purgative, an Indian specific in syphilis, ..	Bengal, ...	562
——— antiquorum.*	bark given with water as a purgative, ...	Common in India, ...	564
——— officinarum.	yields an extremely acrid juice called Euphorbium resin, ..	Arabia and Africa, ...	564
——— Ligularia.*	root mixed with black pepper employed as a cure for snake bites, internally and externally, ...	Bengal, ...	564
——— neriifolia.*	juice used by natives as a purgative, externally as a stimulant in rheumatism and contracted limbs; leaves diuretic,	Bengal, ...	565
——— thymifolia.*	flowers a violent purgative, fresh plant applied to wounds by the Arabs, leaves and seeds given by the Tamools in worm cases, and bowel affections of children, ...	All over India, ...	565
——— Cyparissias.	root excessively acrid, ...	Europe, ...	565

			B. D.	*Page.*
Euphorbia Peplus.	purgative and emetic, ...	Europe, ...		565
——— Gerardiana, ...				
——— Pithyusa, ...				
——— sylvatica, ...				
——— Ipecachuana, ...	action of the root the same but more violent than ipecachuana,	Europe, ...	..	565
——— *Lathyris*, ...	seed contains yellow fixed oil, a powerful purgative, ..	Europe, ...	..	566
Pedilanthus tithymaloides.* *Dodec. Trig.*	used in America as ipecachuana,	West Indies, ...	..	566

NAT. ORDER CXXIII.—ARISTOLOCHIÆ.

Aristolochia Serpentaria. *Gynand. Hexand.*	a valuable tonic, stimulant, and diaphoretic, ...	North America, ...		567
——— longa, ...	properties similar to preceding species, ...	South of France, ...		567
——— rotunda.	bitter, stimulant, and sudorific, ..	South of Europe, West Indies, ..		568
——— Clematitis.*				
——— Pistolochia.				
——— bracteata.	leaves bruised with water given as a remedy in diarrhœa with colic, infusion of dried leaves deemed anthelmintic, ..	cultivated ground on the Coromandel Coast, ...		568

			B. D.	*Page.*
Aristolochia indica.*	root given as an emmenagogue and in paroxysms of gout; considered by native practitioners to be valuable in the diarrhœa of children proceeding from dentition, ...	Bengal, ...		568
Asarum europæum. *Dodec. Monog.* ..	leaves and root emetic while fresh, in large doses cathartic,	Europe, ...		569

NAT. ORDER CXXIV.—BALANOPHOREÆ.

This order contains several parasitic plants.

Balanophora gigantica. *Dioec. Monand.*	a favourite astringent remedy in Burmah, ...	Burmah, ...		569

NAT. ORDER CXXV.—CHLORANTHEÆ.

Chloranthus officinalis. *Tetrand. Monog.*	a stimulant tonic and diaphoretic, ..	Java, ...		570

NAT. ORDER CXXVI.—SAURUREÆ.

Aponogeton monostachyon.* *Hexand. Monog.*	the roots nearly as good as potatoes, much liked by the natives of Bengal,			570

		B. D.	*Page.*
Piper nigrum.* *Diand. Trigyn.* ..	black pepper, piperin prepared from it, a reported febrifuge, pepper chiefly useful as an external application, ...	Malacca, Java, Sumatra, Malabar Coast, Rajamundry district, ..	571
—— Cubeba.	powdered cubebs are employed with almost certain success in gonorrhœa, unless when extremely violent, ...	Java, ...	573
—— caninum.	chief source of the cubebs of commerce, ...	Java, ...	573
—— Afzelii.	its qualities have not been accurately ascertained, ..	source uncertain, ...	574
—— longum.	long pepper, stimulant remedy and spice, ...	wild in India, along water courses towards the Circar mountains,	574
—— trioicum.	excessively pungent, an article of important commerce from Madras, ...	Circar mountains in shady places, ..	575
—— sylvaticum.	used while green, and ripe also, as long pepper, ...	N. W. mountains of Bengal,.. ..	575
—— Betle.* *(Pān.)*	leaf universally chewed in the East with lime and slices of the areca nut; a powerful stimulant to the salivary and digestive organs, ...	cultivated all over India and the Malay countries, also in the W. Indies, ...	575

		B. D. *Page.*
Piper methysticum, ...	Ava pepper, used as a tincture in chronic rheumatism and in infusion as an intoxicating beverage, deemed also anti-syphilitic, ...	Society, Friendly, & Sandwich Islands, 575

NAT. ORDER CXXVIII.—URTICEÆ.

Ficus Carica.* *Monoec. Monadelph.* .	common fig, more important as an article of luxury than for alimentary or medicinal purposes, ...	Asia Minor, south of France, Piedmont, 577
—— indica.*	banyan tree, the lac insect abounds on it, and the bark yields abundance of milky juice containing caoutchouc,	Bengal, ... 577
—— religiosa.*	pipul, bark deemed a good tonic; the lac insect flourishes on this tree, ...	Bengal, ... 577
—— septica...	have an acrid and corrosive juice,	Moluccas, ... 577
—— toxicaria.		
—— tinctoria.	gives a good yellow dye, ...	Society Islands, ... 577
—— elastica.*	yields abundance of the best caoutchouc, ...	Sylhet and Assam, ... 577

		B. D.	Page.
Dorstenia Contrayerva.* *Monoec. Diand.*	root an alleged antidote to poisons and snake bites, used as a tonic formerly, now obsolete,	Florida, ...	577
Morus nigra.* *Monoec. Tetrand.* ..	*mulberry*, bark acrid and bitter, formerly considered purgative and vermifuge. ..	Persia or China, naturalized in India, Europe, and America,	577
Broussonetia papyrifera.* *Dioec. Tetrand.*	used for the preparation of paper,	China and Japan, ...	577
Urtica dioica.* *Monoec. Tetrand.* ..	common nettle, juice an acrid poison; applied externally nettles have sometimes proved advantageous in paralysis, and similar affections; juice has been given internally as an astringent, ...	Europe every where, ...	578
—— crenulata.*	stings so terribly that it has sometimes occasioned formidable symptoms, ...	Timor? Calcutta Botanic Garden, ..	578
Humulus Lupulus. *Dioec. Tetrand.* ..	*hop*, preparations slightly narcotic and tonic, ...	Europe, much cultivated in England, especially in Kent, lately in Deyrah Dhoon, ...	578
Antiaris toxicaria.*	*upas*, juice of this tree one of the most powerful of vegetable poisons, ...	Java, ...	579
Cannabis sativa, or C. indica* *Dioec. Tetrand.*	*hemp*, powerful and valuable remedy in hydrophobia, tetanus, cholera, and many convulsive disorders, ...	South of Africa, South America, Turkey, Egypt, Asia Minor, India, and the adjacent territories of the Malays, Burmese, and Siamese, ...	579

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NAT. ORDER CXXIX.—ULMACEÆ.

			B. D.	*Page.*
Bark of several species slightly bitter and mucilaginous, used as a diuretic, demulcent, and mild tonic, one species officinal in the British Pharmacopœiæ, but nearly obsolete.				605

NAT. ORDER CXXX.—JUGLANDEÆ.

Juglans regia. *Monoec. Polyand.* ..	*walnut*, rich in a valuable drying oil, bark of the root stated to be rubefacient, this reputed property demands investigation, ...	Himalayas, valleys of Cashmere and Nipal, Europe, and Asia, ..		605

NAT. ORDER CXXXI.—AMENTACEÆ.

Salix alba, &c. *Dioec. Polyand.* ..	most of the species yield the principle *salicine*, useful as a febrifuge, ...	Europe, &c.		606
Quercus Robur, *Oak.* *Dioec. Polyand.*	bark very astringent, ...	Europe, ...		607
——— Ballota.	kernels deemed a pleasant article of food, ...	Spain and Greece, ...		607
——— incana.	sold in the bazars as an astringent,	Cabul, ...		607
——— Suber.	cork tree, ...	Asia Minor, Spain, ...		607

		B. D.	*Page.*
Quercus coccifera.	an insect called Coccus inhabits this tree, and is used for dyeing scarlet, ...	Asia Minor, Poland, ...	607
——— infectoria.	*gallnut, oak;* when punctured by a cynips allows an astringent juice to exude, which becomes the gall nut of commerce, ...	Asia Minor, Armenia, and Kurdistan,	607
Castanea vulgaris. *Dioec. Polyand.* ..	common chesnut, in some countries these nuts constitute the principal food of the inhabitants, ...	Europe, ...	608
——— indica.*	yields an edible nut called *nikari*, ..	Mountains in India, ...	608
Fagus sylvatica. *Monoec. Polyand* ..	*Beech*, the almond contains fixed oil with starch, ...	Europe, ...	608
Corylus Avellana. *Monoec. Polyand.* ..	*Hazel*, by expression the kernel yields a very agreeable oil,	Europe, Himalayas, ...	609
Betula Bhojpattra. *Monoec. Tetrand.*	bark used as a substitute for writing paper, and for wrapping hooka snakes, ...	Nipal, ...	609

NAT. ORDER CXXXII.—MYRICEÆ.

Liquidambar styraciflua. *Monoec. Polyand.*	from the bark is obtained the Liquidambar balsam, used to mix with the common Peruvian balsam, ..	Mexico and North America	610

		B. D, *Page*
Myrica Gale. *Dioec. Tetrand.* ..	a wax extracted from the fruits is used for candles, ...	North America, ... 611
—— cerifera.	similar, ...	Cape, ... 611
—— cordifolia.	do.	
—— sapida.*	bark aromatic and stimulant, ..	Himalayas from the Sutlege to Nipal, 611
—— integrifolia.	fruit acid, used for pickling, ..	N. E. frontier of Bengal, ... 611
Putranjiva Roxburghii.‡ *Dioec. Monad.*	nuts used as amulets, ...	Coromandel, Patna, Monghir hills, and from Sylhet to the Kheree jungle, ... 611

NAT. ORDER CXXXIII.—CONIFERÆ.

TRIBE—ABIETINÆ.

Pinus longifolia.* *Monoec. Monad.* ..	produce, gunda biroza, birje or cherkegond, ...	Himalayas, ... 612
—— excelsa.	remarkable for its drooping branches,	Narainhetty, Nipal, Simla, Bootan, .. 612
—— Deodara, ...	a turpentine produced from this is used as a stimulant in foul ulcers, ...	Nipal, Kemaon, Cashmere, ... 612
—— Gerardiana.	seeds form one of the principal articles of subsistence in Kunawur, ...	Kunawur, ... 613
—— sylvestris.	tenacious resin, tar, and pitch, excellent wood for packing cases and fuel, inner bark light and corklike, and contains a mucilaginous principle of a nutritive kind, ...	Mountains of Europe, ... 613

				B. D. *Page.*
Pinus rubra.	red or Scotch pine, nearest British substitute for the last species, ...	Scotland, ...		613
—— maritima.	Bordeaux turpentine, tar, pitch, lamp black, galipot, excellent wood, ...	South of France, ...		613
—— australis.	similar, ...	.. ..		613
—— Mugho.	affords similar products and Hungarian balsam,.. ..	Dauphiny, ...		613
—— Cembra.	Carpathian balsam, &c.	Dauphiny, Piedmont, &c.		613
—— Pinea.	recent oil pleasant to the taste, ..	.. ..		613
—— balsamea.	Canadian balsam, or false balm of Gilead, ...	Canada, ...		613
—— picea.	common fir, Strasburg and common turpentine, lamp-black, Burgundy pitch, Venice or Briançon turpentine, essence of turpentine, resin, &c.	South of Europe, ...		613
—— Strobus.	Weymouth pine, ...	Canada, ...		613
—— nigra.	black pine of the Ohio, ...	Ohio, ...		613
—— orientalis.	Levant fir, yields "pine tears" and a resin, ...	Levant, ...		614
—— Cedrus.	cedar of Lebanon, a peculiar resin and manna-like substance,	Mount Lebanon, ...		614
Araucaria excelsa. *Dioec. Monad.* ..	products similar, ...	Norfolk Island, ...		614

TRIBE 2—CUPRESSINEÆ.

			B. D.	*Page.*
Juniperus Lycia. *Dioec. Monad.* ..	African incense attributed to this tree,	Europe and Africa, ...		619
——— communis.	common juniper; the berries considered diuretic and emmenagogue, their chief consumption for flavoring the spirit called gin, ...	dry and barren hills of Europe, found on the Netee Pass, ..		619
——— excelsa.	.. ..	Himalayas, ...		620
——— Oxycedrus.	gives an oil much used in France in veterinary medicine, and deemed vermifuge when rubbed on the epigastrium, ..	France, ...		620
——— Sabina.	yields oil of savine, leaves powerfully excitant, employed in powder to old ulcers, and in ointment to keep up suppuration from blistered surfaces; the plant said to be powerfully emmenagogue, ...	South of France, Alps, ...		620
Thuya articulata. *Monoec. Monad.* ..	produces the vernix or sandarach,	Africa, Barbary, ...		621
Cupressus sempervirens. *Monoec. Monad.*	evergreen cypress, berries and leaves once deemed a panacea for most diseases, ...	Europe and Asia, ...		621
——— pendula.	fruits formerly deemed astringent and much used in medicine, now obsolete, ...	South of Europe, ...		621

TRIBE 3—TAXINEÆ. Yews.

These present little interest to the therapeutist.

NAT. ORDER CXXIV.—NYMPHEACEÆ.

Nuphar lutea. *Polyand. Monog.* ..	formerly considered poisonous, ..	Europe and America, ...	622
Nymphea alba.* *Polyand. Monog.* ..	roots astringent and slightly narcotic, ...	Bengal,..	622
—— odorata.			
Euryale ferox.* *Polyand. Monog.* ..	seeds farinaceous and a favorite article of diet among the natives, deemed powerful tonics by the Hindoos, ...	tanks about Calcutta,..	622

NAT. ORDER CXXXV.—CYCADACEÆ.

Cycas revoluta.* *Dioec. Polyand.* ..	a kind of sago is obtained from the cellular substance, ..	Japan, ...	622
—— circinalis.*	said to yield sago, also a gum like tragacanth, ...	The Moluccas	622

Class II.

Monocotyledoneæ, or Endogeneæ.

NAT. ORDER I.—AROIDEÆ.

			B. D.	*Page.*
Arum vulgare. *Monoec. Polyand.* ..	common arum, met in commerce under the name of Portland sago, and when thus prepared is an alimentary substance of great value, ...	Europe, ...		624
—— triphyllum.	when the acrid principle is volatilized, the rhizoma yields a fine fecula like arrow root,..	North America, ...		625
—— Serpentaria v. Dracunculus.	recommended as a remedy for the bites of venomous reptiles,	South of France, ...		625
—— Colocasia.*	Egyptian ginger; the tubers of this arum are the chief food of the inhabitants in a great part of Egypt; native of Crete, Syria, Egypt, &c.	Cultivated in India, Egypt, Greece, and America, ...		625
—— orixense.*	tubers the size of a small egg, extremely acrid, and used as a counter-irritant in poultices, also as an application in snake bites; given inwardly Roxburgh describes it as a most powerful stimulant, ..	Various parts of India, ...		625

			B. D.	*Page.*
Homalonema aromatica.* *Monoec. Polyand.*	highly prized as a stimulant in India,	Chittagong, ...		625
Pothos officinalis.* *Monoec. Polyand.* ..	highly esteemed as a stimulant tonic,	Bengal, ...		626

NAT. ORDER II.—ACORACEÆ.

Acorus Calamus.* *Hexand. Monog.* ..	sweet flag, a favourite medicine among the Hindoos as a stimulant in flatulency and similar states, ...	Amboyna, Ceylon, Nipal, Khaseea hills, Malabar, Bourbon, &c. Europe,		626
——— verus.	differs much from this article, ..	Europe, ...		626
Calamus aromaticus. *(of the Ancients.)*	referred by Royle to the *Andropogon Calamus aromaticus,*	Uncertain, ...		626

NAT. ORDER III.—PANDANEÆ.

Pandanus odoratissimus. *(Keŏra.)** *Dioec. Monand.*	a distilled water is prepared from this article, which is gently stimulant and diaphoretic, ...	Bengal, ...		627

NAT. ORDER IV.—TYPHACEÆ.

Aquatic, no plant of this order furnishes any medicinal product of the least value, ...				627

NAT. ORDER V.—CYPERACEÆ.

			B. D. *Page.*
Cyperus longus.* *Triand. Monog.* ..	tonic, diaphoretic or diuretic, ..	Europe, ...	627
——— junciformis.	employed as a diaphoretic and diuretic in India, ...	Bengal,..	627
——— rotundus.*	properties the same as the last species, ...	India, ...	627
——— esculentus.	plant deserves attention for its considerable alimentary value, ...	Egypt, ...	628
——— geminatus. *(Papyrus.)* ..	the exterior tunic of the stems formed the paper of ancient Egypt and Europe, ..	Bulbous roots eaten in India,.. ..	628
Carex arenaria.	German sarsaparilla, ...	Sandy coasts in Europe, ...	628

NAT. ORDER VI.—GRAMINEÆ, *or Grasses.*

Triticum sativum.* *Triand. Digyn.* ..	*Wheat,*	Cultivated everywhere, ...	632
Secale villosum. *Triand. Digyn.* ..	*Rye,*	said to be native of Armenia, Crete and the banks of the Volga, ..	632
Hordeum vulgare.* *Triand. Digyn.* ..	*barley,* being a cheaper crop than corn, is used in Europe for the manufacture of beer, and spirits, ...	Cultivated universally, ...	633

			B. D. Page.
Avena sativa.* *Triand. Monog.* ..	oats, groats or cutlings are the bruised oat seeds freed of the pericarp, ...	grow spontaneously in Sicily near Marsama, also found in the island of Juan Fernandez, ...	635
Oryza sativa.* *Hexand. Monog.* ..	rice, considered in Europe astringent,	.. ..	635
Zea Mays.* *Monoec. Triand.* ..	Maize, Indian corn, alimentary, flour makes an excellent cataplasm, ...	S. America, Hindostan, cultivated in Europe, ...	636
Holcus Sorghum.* *Triand. Monog.* ..	millet, stalks afford sugar, ...	A native of India, cultivated in Peru and in Europe, ...	636
—— saccharatus.	stalks thick and full of sugary medulla, ...	Caffraria, ...	637
—— spicatus.	Douranelle of Egypt, Couz-couz of Africa, ...	East Indies, Europe, ...	637
Panicum miliaceum.* *Triand. Monog.*	millet, alimentary, chiefly used in a kind of gruel or bouillie,	India, cultivated in Europe, ...	637
——— italicum.*	alimentary, gives a heavy disagreeable bread, ...	India, cultivated in Europe, ...	637
Festuca fluitans. *Triand. Monog.* ..	sweet and mucilaginous, ...	Poland manna, &c. Europe, New Holland, ...	637
Lolium temulentum. *Triand. Monog.*	seeds when ground with the cereal grains, render bread poisonous, ...	Europe, ...	638
Saccharum officinarum.* *Triand. Monog.*	sugar-cane, sugar is much used in pharmacy, syrups, pastiles, conserves, are generally preparations of this kind, ..	India, West Indies, Spain, Sicily, &c.	638

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			B. D.	*Page.*
Andropogon Schoenanthus.* *Triand. Digyn.*	lemon grass, leaves used in India as a kind of tea, and deemed tonic and slightly stimulant, ...	Arabia, cultivated in India, Ceylon, and the Moluccus, ..		639
——— Iwarancusa.*	supposed to yield the celebrated "grass oil" of Nemaur,	low hills at the base of the Himalayas, found at Asseerghur and in Malwah, ...		639
——— Calamus aromaticus. ..	Royle refers the "grass oil" to this species; it is used as a stimulant internally and externally in the same manner as the oil of cajeput, ..	Bengal, ...		639

NAT. ORDER VII.—PALMÆ, *the Palms.*

Sagus lævis. *Dioec. Hexand.*	sago tree, ...	Sumatra and the Moluccus, ...		640
—— farinifera.	also yields sago, but of inferior quality, ...	Do. do.		641
Ceroxylon andicola.	melted with a little suet, the wax which flows from fissures in the trunk, makes excellent tapers, ...	Peruvian Andes, ...		641
Phœnix dactylifera.* *Dioec. Hexand.* ..	date tree, the sap is very saccharine, ...	Arabia and India, cultivated in Spain, Italy, and South of France,		641
Elais guineensis.* *Monoec. Hexand.* ..	supposed to yield the palm oil of commerce, ...	Africa and America, ...		641

			B. D.	*Page.*
Cocos nucifera.* *Monoec. Hexand.* ..	cocoa-nut tree, ...	Tropical Countries, ...		642
Areca Catechu.* *Dioec. Hexand.* ..	betel nut, very astringent, ...	Eastern Islands, and cultivated in Bengal, ...		642
Calamus Draco. *Dioec. Hexand.* ..	fruits yield the resin called dragon's blood, ...	Indian Archipelago, ...		642

NAT. ORDER VIII.—SMILACEÆ.

Smilax officinalis. *Dioec. Hexand.* ..	Honduras sarsaparilla, ...	New Granada, ...		643
——— medica.	Vera Cruz sarsaparilla, ...	Mexican Andes, ...		643
——— syphilitica.*	Brazilian sarsaparilla, ...	Brazils, ...		643
——— Sarsaparilla.	not proved to yield the drug, ..	Virginia, ...		643
——— China.	employed as a substitute for sarsaparilla, ...	China, ...		645
——— glabra.*	identical in appearance with the China root, ...	Sylhet,..		645
——— lancifolia.	much resembles the former, ..	Eastern Bengal, ...		645

NAT. ORDER IX.—DIOSCOREÆ.

Yams.	none have any medicinal properties, ...	Tropical Countries, ...		646

NAT. ORDER X.—ALISMACEÆ.

			B. D. *Page.*
Alisma Plantago. *Hexand. Polygyn.* ..	water plantain, some years ago obtained notoriety as an alleged specific in hydrophobia, now fallen into neglect, ..	Europe, ...	646

NAT. ORDER XI.—MUSACEÆ.

The true plantain family.—yields no medicinal substance, ...		Tropical Countries, ...	646

NAT. ORDER XII.—MARANTACEÆ.

Maranta arundinacea.* *Monand. Monog.*	arrow root of the East Indies, ..	Sylhet, ...	646
——— ramosissima.*			

NAT. ORDER XIII.—SCITAMINEÆ OR ZINGIBERACEÆ.

Zingiber officinale.* *Monand. Monog.*	narrow-leaved ginger, a very useful aromatic stimulant, ..	East and West Indies, ...	647
——— Zerumbet.*	bitter as well as aromatic, not used in medicine by European practitioners.	Woods about Calcutta, ...	648
——— Cassumunar.*	now very little used, ...	Do.	648

			B. D. *Page.*
Curcuma Zerumbet.* *Monand. Monog.*	the long zedoary of pharmacy, ..	East Indies, Chittagong, ...	648
—— Zedoaria.*	the round zedoary, both kinds of which resemble ginger in their medicinal qualities, ..	Bengal and China, ...	649
—— rubescens.*	root highly aromatic, its chief use for the preparation of a very fine fecula-like arrow-root, ...	Bengal, ...	649
—— leucorrhiza.*	the tubers yield abundance of fine nutritious fecula, ..	Common in Behar, ...	649
—— longa.*	turmeric, bitter and aromatic, white paper dyed by an alcoholic tincture of turmeric is a very sensitive test for alkalies, ...	Bengal, ...	649
—— angustifolia.*	used in the Benares district for the manufacture of arrow-root,	common in India, ...	649
—— Amada.*	mango-ginger, a gentle stimulant, used only for seasoning food, ...	Bengal, ...	649
Kæmpferia Galanga.* *Monand. Monog.*	roots agreeably fragrant, and of warm bitterish aromatic taste,	common all over India, ...	649
—— rotunda.	do. do.	all over India, ...	650
Amomum Cardamomum. *Monand. Monog.*	this seems to be the round or cluster cardamom of the shops, ...	Java, Sumatra, and mountainous parts of India, ...	650

		B. D. *Page.*
Amomum angustifolium.	the greater cardamoms of the old writers, ...	Madagascar, cultivated in the Mauritius, ... 650
——— maximum.	great winged cardamoms, ...	Malabar? 650
——— aromaticum.	similar in shape and properties to the true cardamoms, ..	Chittagong, and east of Bengal, .. 650
——— dealbatum.*	the *burra elachi* of Sylhet, ...	Sylhet, ... 650
——— Grana paradisi.	malaguetta pepper, ...	Coast of Guinea, near Sierra Leone, .. 650
——— grandiflorum.	yields seeds of camphor-like flavour, ...	Sylhet, ... 650
Elettaria Cardamomum. *Monand. Monog.*	true, or Malabar, or lesser cardamom, ...	Malabar and Canara, ... 651
——— Cardamomum medium. ..	Pareira considers the wild cardamoms of Calcutta to be identical with these fruits, ..	Bengal, ... 651
——— Cardamomum zeylanicum.	analogous to the Malabar cardamom,	Quilon and Matura, ... 651
Alpinia Galanga.* *Monand. Monog.* ..	the true galanga root of the druggists, used for the same purposes as ginger, ...	Sumatra, cultivated in the Indian Archipelago, ... 652
Hedychium spicatum.* *Monand. Monog.*	the root is fragrant, warm, and aromatic, ...	Bengal, ... 652

NAT. ORDER XIV.—ORCHIDEÆ.

Orchis mascula. *Gynandria Monand.* ..	affords salep, ...	Cashmere, ... 653
Vanilla aromatica.* *Gynandria Monand.*	Vanilla plant, on the continent of Europe much esteemed as an ingredient in some stimulating and tonic remedies, ..	the banks of the Orinoco, Venezuela, the Andes, and other S. American territories, ... 653

NAT. ORDER XV.—IRIDEÆ.

		B. D. *Page.*
Crocus sativus. *Triand. Monog.* ..	Saffron, once deemed of great power in medicine, now known to be totally inefficient, ..	Asia Minor, naturalized in England, France, and many other parts of Europe, ... 654
Iris florentina. *Triand. Monog.* ..	Florentine Iris, the orris root of European shops, ...	Italy, Asia Minor, ... 655

NAT. ORDER XVI.—AMARYLLIDEÆ.

Crinum asiaticum. *Hexand Monog.* .. *var:* toxicarium.*	safe and valuable emetic, ..	cultivated all over Bengal, ... 655
Brunsvigia toxicaria. *Hexand. Monog.*	the viscid juice of the bulbs is a powerful poison, ...	Cape of Good Hope, ... 656
Narcissus poeticus. *Hexand. Monog.* ..	emetic, in large doses a powerful poison, ...	Europe, ... 656
——— Tazetta.*	said to have the same effects, ..	India, ... 657
Agave vivipara ?* *Hexand. Monog.* ..	introduced by the Portuguese into India, ...	South America, Bengal, ... 657
——— americana.*	yields abundance of saccharine and mucilaginous sap which readily ferments, a favourite beverage of the Spaniards, powerfully intoxicating, ..	Mexico, ... 657

NAT. ORDER XVII.—MELANTHACEÆ.

			B. D.	*Page.*
Veratrum viride. *Hexand. Trigyn.* ..	roots acrid, emetic, stimulant, subsequently sedative, ...	Swamps of the United States, ..		657
——— album.	root very acrid, causing inflammation wherever it touches; emetic in small doses, in large a virulent acrid and narcotic, rarely given internally, ...	South of Europe, and the Caucasus, ..		657
——— Sabadilla.	affords one kind of the Cevadilla or Sabadilla seeds, ...	South America and West Indies, ..		658
Helonias officinalis, *Hexand. Trig.* ..	yields a kind of sabadilla seed, ..	Mexican Andes, ...		658
——— frigida.	very poisonous, ...	Mexico, ...		658
——— erythrosperma.	used for destroying flies, ...	United States, ...		658
——— dioica.	used in tincture as a bitter tonic, in infusion as a vermifuge, ...	Do.		658
Colchicum autumnale. *Hexand. Trig.*	meadow saffron, the dried cormi and seeds are used for many pharmaceutical preparations, as well as for the preparation of vetraria, ..	Europe, ...		658

NAT. ORDER XVIII.—LILIACEÆ.

Erythronium americanum. *Hexand. Monog.*	emetic, ...	America, ...		661

		B. D.	*Page.*
Aletris farinosa. *Hexand. Monog.* ..	used as a tonic, in large doses tends to act as an emetic, ..	United States,..	662
Scilla maritima. *Hexand. Monog.* ..	Squill; sliced bulb causes irritation and blistering; taken internally nauseant, diaphoretic, or diuretic; in large doses emetic, ...	Mediterranean coast, ...	662
——— Pancration.	effects said to be similar, but milder than the last species,	Malta, Cadiz, and other Mediterranean localities, ...	662
——— indica.*	Roxburgh states that the bulb is quite as nauseous and bitter as that of S. maritima, ..	sea-shores of the Indian Peninsula, ..	662
Ledebouria hyacinthoides.* *Hexand. Monog.*	bulbs said to be a substitute for squill, ...	Bundlecund and Hydrabad, ...	663
Allium Cepa (*onion.*)* *Hexand. Monog.* ——— sativum (*garlic.*)*	raw bulb acrid and irritating, taken internally in small quantities by persons unaccustomed to its use, stimulant, diuretic, and expectorant, ...	Europe, India, ...	663
Dracæna Draco. *Hexand. Monog.* ..	a variety of the red resin called "Dragon's blood" obtained from all parts of the tree by incisions or natural fissures,	Canary Islands, ...	664
Aloe barbadensis.* *Hexand. Monog.*..	yields the Barbadoes aloes of commerce, by some called, *Hepatic* aloes, ...	East Indies, ...	664

		B. D.	*Page.*
Aloe Socotorina.	yields the true hepatic and Mocha aloes, ...	Island of Socotra, ...	664
—— spicata.	yields Cape aloes, ...	Native of the interior of the Cape of Good Hope, ...	665
—— indica...	probably the source of some of the common aloes of the bazars, produces Cape aloes and the coarse variety called fœtid, caballine, or horse aloes,.. ..	North-west of India, ...	665

Division II.

CRYTOGAMIA, OR FLOWERLESS PLANTS.

ORDER I.—FILICES. (*Ferns.*)

Nephrodium filix mas. *Cryptog. Filices.*	male fern, has been celebrated as an anthelmintic, ...	Europe, ...	676
Polypodium Caliguala. *Cryptog. Filices.*	formerly celebrated as a diaphoretic and diuretic, ...	do.	676
Asplenium radiatum. *Cryptog. Filices.*	employed by the natives as an anthelmintic, ...	Himalayas, ...	677

			B. D. *Page.*
Adiantum capillus veneris. *Cryptog. Filices.*	expectorant, in Europe it forms the basis of the Syrop de Capillaire, ...	indigenous in the Himalayas,	.. 677

ORDER II.—ALGÆ.

Fucus vesiculosus. *Cryptogamia Algæ.*	common sea weed or bladder wrack, formerly used in the treatment of scrofula, ..	common to all seas, ...	667
Chondrus crispus. *Cryptogamia Algæ.*	Irish rock moss (carrageen), excellent demulcent remedy,	Irish Coast, ...	668
Gigartina Helminthochorton. *Cryptog. Algæ.*	Corsican moss, has enjoyed much celebrity as a vermifuge,..	Corsica, ...	668
——— lichenoides.	Ceylon moss, affords a valuable alimentary jelly, useful in phthisis, ...	Ceylon, ...	668

ORDER III.—FUNGI, (*Mushrooms.*)

Ergotætia abortifaciens. *Cryptog. Fungi.*	invaluable from its powerful effects on the uterus, ..	Europe, America, ...	673

ORDER IV.—LICHENES.

			B. D.	*Page.*
Cetraria islandica. *Cryptog. Algæ.* ..	Iceland moss, may be used in the same manner as the Ceylon moss, also bitter, ..	Iceland, ...	672	
Rocella tinctoria.	source of the orchil of the dyers, ..	Canaries and Azores, ...	672	
Lecanora tartarea.	yields the valuable dye stuffs cudbear, and litmus, ..	rocks of Norway, Scotland, and other northern countries, ...	672	
Borrera Ashneh.	chulchilhera lichen of the Himalayas, ...	Himalayas, ...	673	

ORDER V.—LYCOPODIACEÆ.

Lycopodium. *Cryptog. Filices.* ..	a vegetable powder, procured from a crytogamic plant called the club moss, used to prevent the cohesion of pills in the pill box; magnesia is now generally preferred, ..	Europe, ...	676	

Table II.

Tabular Conspectus of the Materia Medica, arranged according to Medicinal Effects.

In this Table we give lists of the articles of Materia Medica, especially those available in Bengal, and India generally.

The Vegetable, Animal, and Mineral substances are separately grouped. References are given under each head to works in which fuller descriptions are to be found. The active principle producing the special effect is named in the fifth column. The subjoined abbreviations are to be attended to.

Rx. Roxburgh, Flora Indica.	A. Ainslie, Materia Indica.	Rl. Royle, Illustrations.	W. Wight, Illustrations.	L. Lindley Flora Medica.	B. D. Bengal Dispensatory.

H. Hindostanie or Hindee, S. Sanscrit, B. Bengallee, P. Persian, A. Arabic, *Tam.* Tamul, *Tel.* Telingee.

The articles in Italics are of acknowledged value as remedies, and are inserted with their officinal preparations in the Pharmacopœia.

The active principle is only specified when it corresponds with the effect special to each section.

Division I.

DILUENTS, EMOLLIENTS, AND DEMULCENTS. B. D. 132.

VEGETABLE KINGDOM.

Classical and English Names.	Usual Native Name.	Locality.	Part used.	Active principle.	References.
PAPAVERACEÆ. *Papaver somniferum*, ...	Post, H.	All temperate latitudes,	capsules, ..	.. ..	B. D. 171. Rl. 119, A. v. i. 326, v. ii. 339, Rx. v. ii. 571.
VIOLACEÆ. Ionidium suffruticosum, ..	Ruttun Purus, H.	Mysore, ...	leaves and herb, ..	.. ..	B. D. 209, Rl. 74.

Classical and English Names.	Usual Native Name.	Locality.	Part used.	Active principle.	References.
LINEÆ.					
Linum usitatissimum, (Linseed,)	Atees, Mushina, B. ..	Bengal and Behar, ..	seeds, ...	.. ..	Rl. 82, B.D. 212, A. v. i. 196. Rx. ii. 110.
MALVACEÆ.					
Sida rhomboidea, ...	Lal Barela, H. ..	Bengal, ...	roots and leaves, ..	..	B. D. 219, Rl. 84, Rx. iii. 176.
—— *acuta*, ...	Pata, S.	do.	leaves, ...	..	B. D. 215.
—— asiatica, ...	Jamp petaree, B.	do.	do.	..	B. D. 219, Rl. 84.
Hibiscus (or Thespesia) populneus, Portia tree, ...	Sooparshavaka, S. Purush, B. H.	Bengal, ...	fruit, ...	..	A. v. ii. 333, Rl. 30, B. D. 218.
Hibiscus rosa sinensis, ...	Jaba, B.	Bengal gardens, ..	leaves, ...	..	A. v. ii. 359, B. D. 218, Rl. 84.
Pavonia zeylanica, ...	.. ..	Bengal, ...	root, ...	..	A. v. ii. 395, B. D. 219, Rl. 83.
Althæa officinalis, ...	Gool khirree, H.	Cultivated in Bengal, ..	leaves and roots, ..	..	B. D. 214, Rl. 83, Rx. iii. 180.
Malva sylvestris, marsh mallow, ..	Khitmie, P.	do. do.	Herb of, ...	..	B. D. 214, Rl. 83.
Gossypium herbaceum, Cotton Bush, ...	Rooi, H.	Bengal, ...	root, ...	..	A. v. ii. 282, B. D. 213, Rl. 87.
Pavonia odorata, ...	Bala, S.	Bengal, ...	root, ...	..	A. v. ii. 297, B. D. 219.
Hibiscus longifolius, syn, Abelmoschus longif. or esculentus,	Bendee, *Tel.* Dharoos, Ramturai, Okra, B. ..	Bengal, commonly in gardens, ...	Capsules & fruits, ..	..	Rx. v. iii. 211, B. D. 215, Rl. 84, A. v. ii. 72.
STERCULIACEÆ.					
Bombax (Eriodendron) Pentandrum, Cotton tree, ...	Suffed Simul, H. ..	Common in India, ..	Gum, root, ...	..	A. v. ii. 96, B. D. 227, Rl. 101.
Sterculia Balanghas, ...	*Gum*, Kutira, H.	Bengal, ...	Seeds and gum, ..	..	Rl. 103, B. D. 225, Rx. ii. 144.
——— urens, ...	.. ..	do.	.. ..	..	
——— fœtida, ...	.. ..	do.	Fruit and gum, ...	..	A. v. ii. 199, Rl. 103.
Guazuma tomentosa, ...	Gao Zuban, H.	Bengal, in gardens, ..	Gummy bark leaves, ..	..	Rl. 103, B. D. 226.
TEMSTROEMACEÆ.					
Cochlospermum Gossypium, ..	*Gum*, also called Kutira, ..	N. W. Provinces, ..	Gum, ...	..	Rl. 104, B. D. 225.
TILIACEÆ.					
Corchorus olitorius, ...	Pat. Bhunghee, B.	Bengal, ...	Infusion of leaf, ..	..	Rl. 103, A. v. ii. 387, B. D. 229.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
AURANTIACEÆ.					
Sansevieria zeylanica, ...	Murgabe, H.	Bengal, ...	root in electuary, ..	..	A. v. ii. 192, Rl. 389. Rx. ii. 661.
Ægle Marmelos, ...	Bilva or Bel, H.	do.	bark and fruit, ..	..	A. v. ii. 188, Rl. 8, 129, B. D. 233.
SAPINDEÆ.					
Sapindus emarginatus, ...	Ritta, H.	Bengal, ...	fruit, ...	..	A. v. ii. 318, Rl. 137, B. D. 241. Rx. ii. 279,
VITACEÆ.					
Vitis vinifera, Vine, ...	Draksha, S. Angoor, H. ..	Growing in many parts of Bengal,	raisins, ..	..	B. D. 251, Rl. 144, A. v. i. 157, 333.
RHAMNACEÆ.					
Zizyphus Jujuba, ...	Vedari, S. Baer, H. ..	Common in India, ..	fruit and roots, ..	..	A. v. ii. 94, B. D. 273, Rl. 168. Rx. i. 608.
LEGUMINOSÆ.					
Aspalathus (or Anthyllis) indica,	Shiva nimba, S.	Bengal, ...	leaves, flowers and roots,	..	A. v. ii. 385, B. D. 316.
Arachis hypogæa, ...	Moongphulli, China badam,	Cultivated near Calcutta	seeds and oil, ..	..	Rx. v. iii. 280, B. D. 304, Rl. 118.
Tamarindus indicus, tamarind, ..	Tinteri, S. Umli, H. ..	Beng. & India generally	pulp of fruit, ..	..	Rx. v. iii. 215, B. D. 309, Rl. 183, A. i. 425.
Abrus precatorius, Indian liquorice, ...	Goonch, Rette, H. ..	Bengal in gardens, ..	root, ...	..	Rx. v. iii. 257, B. D. 297, & 294, A. ii. 79, Rl. 194.
Bauhinia emarginata, ...	*Gum*, Seni ke goond, H. ..	do. do.	gum, ...	..	Rl. 184.
——— tomentosa, ...	Usmaduga, S.	Malabar, Coromandel, ..	dried flowers and buds, ..	..	B. D. 317, A. ii. 48.
Cassia auriculata, ...	Talopota, S.	Botanic garden, Calcutta, Coromandel,	seeds, ...	..	A. v. ii. 31, B. D. 309, Rl. 185.
Coronilla picta, ...	Krishna rajam, B. ..	Bengal in gardens, ..	leaves in poultice, ..	..	A. v. 64, B. D. 317, Rl. 195.
Glychirrhiza glabra, liquorice, ..	Jetimadh, H.	Europe, ...	root, extract, ...	..	B. D. 293, A. v. i. 199.
Astragalus verus, tragacanth, ..	.. ..	Sierra Leone, ...	gum, ...	..	B. D. 294, A. v. i. 162, Rl. 193.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Acacia, several species of, ..	*Gum*, Kavit goond, Babula goond, H. Sumug Arabee, A.	India, Arabia, ..	gum, ...	.. ..	B. D. 299, A. v. ii. 142, Rl. 182.
ROSACEÆ.					
Prunus domestica, prune tree, ..	.. ..	Asia Minor, ...	fruit, ...	.. ..	B. D. 324. Rl. 202.
Pyrus tomentosa, *Cydonia vulgaris*, Quince, ..	Beheedana, H.	Muscat, Tippera in Bengal, Asia Minor, Cabul, Bokhara, ..	seeds, ...	.. ..	Rx. v. ii. 513. B. D. 330, A. i. 322, Rl. 205.
Amygdalus communis, sweet almond, ...	Meetha Badam, H. ..	Asia Minor, Europe, ..	sweet almond, ..	.. ..	B. D. 318. Rl. 202, A. v. i. 7.
ONAGRARIÆ.					
Trapa bispinosa, ...	Singara, H. Paneephul, B.	Bengal, ...	seeds or nuts, ..	.. ..	Rx. i. 428. Rl. 211. B. D. 330.
—— natans, ...	.. ..	Do.	Do.	.. ..	Rx. v. i. 428.
COMBRETACEÆ.					
Terminalia Catappa, ...	Ingudi, S. Badam, B. ..	Bengal, ...	almond, oil, ..	.. ..	B. D. 341, Rl. 210, A. ii. 194.
CUCURBITACEÆ.					
Cucurbita pepo, *pumkin*, ...	Meetha kuddoo, H. ..	India generally, ..	fruit & seeds, ..	.. ..	Rl. 218, B. D. 351.
Momordica dioica, ...	Agokara, Tam.	Bengal, ...	root, ...	.. ..	A. v. ii. 274, Rl. 219.
Bryonia rostrata, ...	Appakovay, *Tam.* ..	Tranquebar, ...	root, ...	.. ..	A. v. ii. 21, B. D. 347, Rl. 218.
Cucumis utilissimus, ...	Kurktee, B. Kakni, H. ..	Generally in Bengal, ..	the seeds, ..	.. ..	Rx. v. iii. 722, B. D. 351, Rl. 218.
UMBELLIFERÆ.					
Daucus Carota, Carrot, ...	Gajra, H.	Cultivated in Bengal, ..	root, ...	.. ..	B. D. 368, Rl. 229, A. v. i. 57.
CINCHONACEÆ.					
Rubia Manjista, Madder, ...	Munjit, H.	Bengal, ...	root, ...	.. ..	A. v. ii. p. 182, B. D. 378, Rx. i. 374, Rl. 261.
SYNANTHEREÆ.					
Elephantopus scaber, ...	Sham dolu, B.	Common in India, ..	root, ...	.. ..	A. v. ii. 17, L. 449, Rl. 248

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
SAPOTEÆ.					
Bassia butyracea, ...	Fulwa or Phulwara, H.	Almorah, Nipal, ..	buttery oil, ...	..	Rl. 263, B. D. p. 427, 428.
——— *latifolia*, ...	Mohowa, H.	do.	do.	..	A. ii. 100, Rx. ii. 526, Rl. 262, B. D. 428.
——— longifolia, ...	Illupi, H.	do.	do.	..	A. ii. 99, Rx. ii. 523, Rl. 262, B. D. 428.
JASMINEÆ.					
Olea europea, Olive tree, ...	....	Europe, ...	oil of olives, ...	..	B. D. 432.
Fraxinus, *Ornus*, .. } manna ash, several species, ... }	....	Europe, ...	manna, ...	..	B. D. 434.
SOLANEÆ.					
Solanum indicum, ...	Kolse ke jur, H. Vrihate, S.	Bengal, ...	root, ...	..	A. ii. 207, B. D. 463, Rx. i. 570, Rl. 279.
SCROPHULARINEÆ.					
Torrenia asiatica, ...	Caela dola, S.	Malabar, ...	juice of leaves	..	A. p. 113, Rl. 290, A. ii. 122, Rx. iii. 95.
PEDALINEÆ.					
Pedalium Murex, ...	Burra Gookeroo, B.	Sea coast of India, ..	leaves, ...	..	Rx. v. iii. p. 114, B.D. 480, Rl. 294, A. ii. 18, 386.
Sesamum orientale, ...	Til, H. B.	Cultivated generally,..	oil, ...	..	Rx. iii. 100, Rl. 70, A. ii. 53, 255.
BIGNONACEÆ.					
Bignonia chelonoides, ...	Poupadyrae, *Tam.*	Malabar, ...	root and flowers, ..	..	A. ii. 272, Rl. 295, Rx. iii. 106, B. D. 480.
VERBENACEÆ.					
Vervena nodiflora, ...	Vashira, S. Bhreengar, H.	Gardens, ...	tender stalks and leaves, ..	..	A. ii. 313, B. D. 484.
Gmelina asiatica, ...	Biddari, H.	Bengal, ...	roots and leaves, ..	..	A. ii. 240, B.D.486, Rx.iii.87.
——— parviflora, ...	Shieri goomoodoo, *Tel.* ..	Malabar,..	plant bruised in water,.. ..	..	as above.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Vitex Negundo, ...	Nisinda, H. Nergunda, B.	Bengal, ...	leaves in decoc-	.. ..	A. ii. 252, Rl. 299, Rx. iii.
—— *trifolia*, ...	Nisinda, H. Sinduvara, S.	Behar, ...	tion, ...	.. ..	70, B. D. 485.
LABIATÆ.					
Ocymum pilosum, ...	Baboi tulsi, B. Habak, A.	Bengal generally, ..	seeds, ...	.. ..	Rx. iii. 16, B. D. 493, A. ii. 423.
——— *Basilicum*, ...	Kalee tulsee, H.	Bengal, ...	seeds, ...	.. ..	Rx. iii. 17, B. D. 493, A. ii. 423.
CORDIACEÆ.					
Cordia latifolia, ...	Buhooari, B.	South of India, ...	fruit, ...	.. ..	Rx. i. 588, B. D. 498, Rl.306.
——— myxa, ...	Burra lesoora; *fruit*, sebis-				Rx. i. 590, B. D. 498, A. ii.
	tens, ...	Cultivated in Bengal, ..	fruit, ...	.. ..	466, Rl. 306.
CONVOLVULACEÆ.					
Convolvulus speciosus, ...	Samudrapata ?	Bengal, ...	leaves as a poul-		
			tice, ...	.. ..	A. ii. 357.
——— gemellus, ...	....	Do.	leaves, ...	.. ..	A. ii. 394.
PLANTAGINEÆ.					
Plantago Ispaghula.	Ispaghool, H. Busr kaloo-	Cultivated in Bengal,	seeds.	.. ..	A. ii. 116, Rx. i. 404, B. D.
	na, A.				510.
PHYTOLACCEÆ.					
Phytolacca acinosa, ...	....	Nepal, ...	leaves, ...	.. ..	Rx. ii. 458, B.D. 527, Rl. 320.
AMARANTACEÆ.					
Amarantus polygonoides, ...	Cheloo nuteeya, B.	Bengal, ...	root, ...	.. ..	Rx. iii. 602, Rl. 320.
——— campestris, ...	....	Do.	do.	.. ..	A. ii. 392, B. D. 528.
and several other species,					
MYRISTACEÆ.					
Myristica officinalis, (Nutmeg.)	Juephul, H.	Banda, ...	concrete oil, ..	.. ..	B. D. 534, A. i. 201, 249, Rx. iii. 843, Rl. 323.
EUPHORBIACEÆ.					
Phyllanthus simplex, ...	Oochie userekee, B. ..	Mysore, ...	leaves, flowers and fruit,	.. ..	Rx. iii. 654, B. D. 552.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Phyllanthus madraspatensis, ...	....	Madras, ...	leaves in infusion, ...	....	A. ii. 245, B. D. 552.
Janipha Manihot, tapioca plant, ..	....	Bengal, ...	*tapioca*, from the roots, ...	....	B. D. 559, Rl. 327.
URTICEÆ.					
Ficus religiosa, ...	Pipul, H.	Bengal, ...	seeds, ...	....	A. ii. 25, B. D. 577, Rx. iii. 547, Rl. 336.
—— Carica, (*Fig.*)..	Unjeer, P. D...	Asia Minor, ...	dried fruit, ...	....	A. i. 131, B. D. 577, Rx. iii. 528, Rl. 337.
ULMACEÆ.					
Ulmus campestris (*Elm.*)	....	Europe, ...	bark, ...	....	B. D. 605, Rl. 341, Rx. ii. 68.
NYMPHEACEÆ.					
Nymphœa Lotus, ...	Bhamber, S. Shalook, B. ..	Bengal tanks, ...	root, ...	....	A. ii. 233, 381, B. D. 622, Rx. ii. 577, Rl. 65.
Nelumbium speciosum, ...	Komol, B. Lalkomol, H. ..	Bengal, ...	root, ...	....	A. ii. 235, 410, B. D. 622, Rx. ii. 647, Rl. 65.
—— nymphoides, ...	....	Bengal tanks, ...	seeds, ...	....	Rl. 65, B, D, 622.
Euryale ferox, Syn. Anneslea spinosa, ...)	Makana, B.	Chittagong, Tippera, ..	seeds, ...	....	B. D. p. 622, Rl. 65.
CYCADACEÆ.					
Cycas, Sago plants, ...	Sagoo, *Malay*, ...	Moluccas, ...	fecula of pith, ..	....	B. D. 622, A. i. 361, Rl. 347, Rx. iii. 744.
AROIDEÆ.					
Arum maculatum, ...	....	Europe, ...	fecula of root, ..	....	A. ii. 464, B. D. 624, Rx. iii. 494, Rl. 406.
—— triphylum, ...					
—— Colocasia, ...	Kuchoo, B.	Bengal, ...	do.		
—— orixense, ...	Ghetkol, B.	Orissa, ...	do.	....	B. D. 624, Rx. 503, Rl. 406.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
CYPERACEÆ.					
Cyperus rotundus, ...	Mootha, B.	Moist places near the sea, ...	bulb, ...	....	A. ii. 163, B. D. 627, Rl. 413.
Cyperus longus, ...	Nagurmoótha, H.	Bengal, ...	root, ...	....	Rx, i. 188, Rl. 413.
——— esculentus, ...	....	....	do.	....	B. D. 628, Rl. 413.
——— geminatus, ...	....	....	do.	....	
Carex arenaria, *(German sarsaparilla,)*	....	Europe, ...	root, ...	....	Rl. 414.
——— bengalensis, ...	....	Bengal, Sylhet, ...	root, ...	....	Rx. iii. 572.
GRAMINEÆ.					
Scirpus dubius, ...	....	Bengal generally, ...	roots, ...	....	Rx. i. 215, Rl. 414.
Saccharum officinarum, sugar cane	Ook'h, H.	All over India, ...	culms and sugar,	....	Rx. i. 237, B. D. 638, A. i. 407, ii. 460, Rx. i. 237.
Andropogon, (or Holcus) Sorghum,	Jooar, H.	Cultivated generally, ..	grain, ...	....	Rx. i. 269, B. D. 636.
Holcus spicatus, ...	Bujra, ...	Cultivated as a grain, ..	do.	....	A. ii. p. 112, Rx. i. 283, B. D. 637.
Agrostis linearis, *bent grass*, ...	Doorba, B.	....	grass, ...	....	A. ii. 27, Rx. i. 289, Rl. 417.
Avena sativa, oats, ...	.. ..	Do. do.	seeds, ...	....	Rl. 419, B. D. 635.
Triticum vulgare, wheat, ...	Gioon, B.	Cultivated in Europe and India, ...	starch, wheat flour,	....	B. D. 632, Rl. 417, A. i. 333, Rx. i. 359.
Hordeum distichon, barley, ...	Jow, H.	Do. do.	seeds and flour, ..	...	B. D. 632, Rl. 418, Rx. i. 358.
Secale cereale, *rye*, ...	....	Do. do.	....	....	
Oryza sativa, rice, ...	Dhan or chawl, H.	....	do.	...	B. D. 632.
Zea mays, *maize*, ...	Mokha, B.	Do. do.	do.	....	Rl. 419, A. i. 338, B. D. 635, Rx. ii. 200.
Panicum miliaceum, *millet*, ...	Kungoo, H.	Do. do.	do.	....	Rl. 420, Rx. iii. 567, B D. 636.
——— Italicum, ...	....	....	....	....	Rl. 421, A. i. 226, B. D. 637, Rx. i. 310.
PALMÆ.					
Cocos nucifera, cocoa nut, ...	Naryal, H.	Coast & delta of Bengal,	milk and oil, nut,	....	A. i. 77, ii. 415, B. D. 642, Rl. 395, Rx. iii. 614.

Classical and English names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Sagus, *several species of Sago plants*, ...	....	....	....	..	Rl. 395, Rx. iii. 623, B. D. 640.
——— *Rumphil*, Sago palm, ...	....	Moluccas, ...	pith of stems, ..	..	
DIOSCOREÆ.					
Yams, ...	Kamaloo, B...	Bengal, ...	roots, ...	..	Rl. 379, Rx. iii. 797, B. D. 646.
MARANTACEÆ					
Maranta arundinacea, and other species, arrow root, ...	....	East Indies, Bengal, ..	arrow root, ...	..	B. D. 646, Rl. 356.
ZINGIBERACEÆ.					
Curcuma longa, ...	Tikor, ...	Bengal, ...	fecula, ...	..	Rl. 358, A. i. 454, Rx. i. 32, B. D. 649.
——— *leucorrhiza*, ...					
——— *rubescens*, ...					
——— *angustifolia*, ...					
ORCHIDEÆ.					
Orchis mascula, salep, ...	*Roots*, Salep misree, H. ..	Europe and Cashmere,	tuberous roots, ..	..	A. i. 368, Rl. 369, B.D. 653.
LILIACEÆ.					
Asparagus surmentosus, ...	Sufaid mooslie, B.	Bengal, ...	root, ...	..	A. ii. 409, B. D. 661 Rl. 392, B. D. 168.

Classical and English names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
ALGÆ, *Sea-weeds.*					
Chondrus crispus, *Irish moss,*		Ireland,	whole plant,		B. D. 668.
Gigartina lichenoides, *Ceylon moss,*		Ceylon,	do.		B. D. 668.

ANIMAL KINGDOM.

ANIMAL FATS.	Suet,	Product of—	Sheep—Ovis aries.
	Lard,		Sow—Sus scrofa.
	Butter, Clarified ghee,		Cow and Buffalo.
MILK,			do. do.
ISINGLASS, or gelatine,			Accipenser sturio, (Sturgeon.) Polynemus Sele of the Ganges, &c.
WAX, HONEY,			Bee, Apis mellifica.
SPERMACETI,			Physeter macrocephalus, whale.
EGG of the domestic fowl,			Phasianus Gallus.
HARTSHORN,			Horns of various species of deer, Cervus.

Division II.

DIAPHORETICS. B. D. p. 133.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
RANUNCULACEÆ.					
Clematis, several species of, ..	....	Ruins of Gour, &c. &c.	dried leaf in infusion,	..	B.D. 160, Rx. ii. 678, Rl. 43, 51.
PAPAVERACEÆ.					
Papaver somniferum, poppy, ..	Post, H. Khuskhush, A. Chosa, S.	Cultivated in India, ..	capsules, concrete juice, and anarcotine,	..	B. D. 171, Rx. ii. 571, Rl. 66, A. i. 326, ii. 339.
CRUCIFERÆ.					
Cochlearia Armoracia, horse radish,	....	Europe, ...	root in infusion, ..	..	B. D. 187, Rl. 72.
Sinapis, several species of, mustard,	Raee, B. Surson, H.	India, ...	seeds, ...	..	B. D. 189, A. i. 615, ii. 230, Rl. 70, Rx. iii. 117.
MAGNOLIACEÆ.					
Wintera aromatica, winter's bark tree, ...	....	Straits of Magellan, ..	the bark, ..	..	B. D. 192.
Magnolia glauca, swamp sassafras,	....	America, allied species in Sylhet,	bark, ...	..	B. D. 192.
BERBERIDEÆ.					
Berberis Lycium, ——— aristata, Barberry, ..	Chitra, *Kushmul* (the plant) the extract *Rusot*, H. Hoosiz Hindee, the wood *dar Huldee*,	Himalayas, ...	bark and extract,	Berberite,	B. D. 203. Rx. ii. 182, Rl. 64.
		....	....	..	
CAPPARIDEÆ.					
Cleome pentaphylla, ...	Hurhurya, B.	Bengal, ...	seeds, ...	..	B. D. 206, A. ii. 224, 451, Rx. iii. 127, Rl. 72.
VIOLACEÆ.					
Viola odorata, the scented violet and many other species, ...	Banopsha, H.	Himalayas, Neilgherries,	dried plant, ..	Violine, ..	B. D. 208, A. ii. 267, Rx. i. 649, Rl. 74.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Ionidium suffruticosum, shrubby ionidium, ...	Charati, S.	India, ...	root, ...	..	B. D. 209, A. ii. 544, Rl. 74.
——— microphyllum, small leaved do.	....	Brazil, ...	root, ...	..	
——— Ipecacuanha, ...	....	South America, ..	root, ...	Emetine,	
POLYGALEÆ.					
Polygala Senega, snake root, ...	....	South America, ..	roots, ...	Polygalic acid,	B. D. 209, Rl. 75, A. ii. 801, Rx. iii. 218.
MALVACEÆ.					
Sida acuta or *lanceolata*, acute or lance-leaved sida, ...	Pata, S.	Bengal, ...	root in infusion, ..	..	B. D. 21, Rl. 83 A. ii. 178, Rx. iii. 171.
ZYGOPHYLLEÆ.					
Guajacum officinale, guaiac tree,	....	Jamaica, Hispaniola, ..	wood and resin, ..	resin,	B. D. 258.
RUTACEÆ.					
Ruta graveolens, heavy smelling rue, ...	....	Europe, ...	expressed juice, .	..	B. D. 260, Rl. 155, Rx. ii. 374, A. i. 351.
—— *angustifolia*, narrow leaved rue, ...	Sudab, H.	India, ...	the herb, ..	Essential oil,	Rl. 155.
Galipea Cusparia, or Cusparia febrifuga, cusparia tree, ...	....	Orinoco, ...	the bark, ..	..	B. D. 261.
TEREBINTHACEÆ.					
Boswellia thurifera, male frankincense or Indian olibanum tree, ...	the resin, Gunda Barosa, H.	Central India, Shahabad, ...	the resin and essential oil, ..	..	B. D. 283, A. i. 26, 277, Rx. ii. 246.
Protium gileadense, Balm of Gilead tree, ...	the Balsam, Roghen Bulsan *Pers.*	Arabia, ...	Balsam, ...	..	B. D. 284, Rx. ii. 246.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Amyris Commiphora, Googul or Bdellium tree, ...	supposed source of *Googul*, or Bdellium,	Sylhet, ...	resinous substance	..	B. D. 287, Rl. 176, Rx. ii. 244.
LEGUMINOSÆ.					
Myrospermum peruiferum, Balsam of Peru tree, ...	....	Colombia and Mexico,	Balsam, ...	..	B. D. 290,
——— *toluiferum*, tolu balsam tree, ...	....	South America, ..	Balsam, ...	..	B. D. 291.
Balsamodendron Myrrha, or *Protium Kataf*, myrrh tree, ...	the myrrh, Vola, S. Heeru Bol. D, Muri, A.	Arabia Felix, ...	Gum resin, myrrh	..	B. D. 285.
UMBELLIFERÆ.					
Archangelica officinalis, ...	....	North of Europe, ..	root, ...	..	B. D. 361.
Opoponax Chironium, opoponax plant, ...	gum resin, *Juwashur*, H. ..	Asia Minor, ...	Gum resin, ..	..	B. D. 361.
CINCHONACEÆ.					
Cephaelis Ipecacuanha, Ipecacuanha plants.	....	New Granada, ...	root, ...	Emetine,	B. D. 379.
Psychotria emetica, ...	....	do.	do.	do. ..	B. D, 282.
Richardsonia emetica, ..	....	do.	do.	do. ..	B. D. 388.
VALERIANEÆ.					
Valeriana officinalis, Valerian, ..	....	Europe, ...	root, ...	Essential oil	B. D. 402.
Nardostachys Jatamansi, spikenard	Sumbul Hindee, Balchur, H.	Himalayas, ...	roots, ...	..	B. D. 403, A. ii. 367, Rx. i. 163, Rl. 244.
SYNANTHEREÆ.					
Anthemis nobilis, cammomile, ...	Baboone phool, H. ...	Europe and Persia, ..	flowers, ...	..	B. D. 413, Rl. 290, A. i. 67.
Artemisia Dracunculus, dragon wormwood, ...	....	Siberia, ...	inspissated juice,	..	B. D. 415, Rl. 250, Rx. iii. 417.
——— rupestris, rock wormwood,	....	Switzerland, ...	whole plant, ..	..	B. D. 415.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Tussilago Farfara, coltsfoot, ...	....	Europe, ...	leaves & flowers,	..	B. D. 320, Rl. 249.
Eupatorium Ayapana, ...	Aya pana, B.	Bengal, ...	plant in infusion,	..	B. D 423, A. ii, 35, Rl. 25.
STYRACINEÆ.					
Styrax Benzoin, Benzoin tree, ..	the resin, Looban, H.	Borneo, Java, ...	the resinous exudation, ...	..	B. D. 430, Rl. 261, R . ii. 416, A. i. 33.
APOCYNEÆ.					
Apocynum androsæmifolium, ...	....	United States;	root, ...	..	B. D. 448.
———— cannabinum, ...	....	.. .. ..	root, ...	..	B. D. 448.
ASCLEPIADEÆ.					
Asclepias tuberosa, ...	....	United States, ...	root, ...	..	B. D. 452, Rl. 274.
Calotropis gigantea, and other species, mudar plant, ...	Akund, S. Ak, mudar, H.	Bengal, ...	bark of the root,	..	B. B. 452, Rx. ii. 30, A. i. 486, ii. 488, Rl. 273.
Tylophora asthmatica, ...	Untamol, B.	Bengal, ...	root, ...	..	B. D. 455, Rx. ii. 33, Rl. 274.
Hemidesmus indicus, ...	Ununtamol, B.....	Bengal, ...	stems and roots, ..	..	B. D. 456, Rx. ii. 39, Rl. 272, 383.
SOLANEÆ.					
Solanum cernuum, ...	....	Brazil, ...	flowers & leaves,	..	B. D. 462.
LABIATÆ.					
Anisomeles malabarica, cat mint,	Bootan kooshum, S.	Malabar, ...	vapour of, infusion, ...	..	B. D. 492, Rx. iii. 1, A. ii. 294, Rl. 300.
THYMELEÆ.					
Daphne Mezereum (mezereon) other species, ...	Mazrioon, modern Greek, ..	Persia, ...	bark of stem, ..	..	B. D. 500, Rl. 321.
LAURINEÆ.					
Laurus Sassafras, sassafras tree, ..	....	North America, Nipal? ..	wood, root, ..	Essential oil,	B. D. 544. Rl. 324, A. i. 383.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Laurus Camphora, or Camphora officinarum, camphor tree, ...	*Camphor*, Kupoor, H.	Japan, Formosa, ..	camphor, ..	..	B. D. 545, Rx. ii. 304, A. i. 568.
EUPHORBIACEÆ.					
Cicca disticha or Phyllanthus longifolia, ...	Cheramela or Huriphul, H.	Bengal, ...	leaves and seeds,	..	B. D. 551, Rl. 327, Rx. iii. 673.
ARISTOLOCHIEÆ.					
Aristolochia Serpentaria, and several other species, ...	....	North America, ..	roots, ...	resin, essential oil,	B. D. 567, A. ii. 299, 300, Rx. 489, Rl. 329.
CHLORANTHEÆ.					
Chloranthus officinalis, ...	....	Java, ...	root, ...	..	B. D. 570.
PIPERACEÆ.					
Piper methysticum, intoxicating pepper, ...	....	Sandwich islands, ...	fruit, ...	..	B. D. 575.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
SMILACINEÆ.					
Smilax Sarsaparilla, ...	....				
——— *China*, ...	Shookchina, H.....	China,...	roots, ...	..	B. D. 644, A. i. 70, 592, Rx. iii. 792, Rl. 381.
——— and several other species,..	Gotee shookchina, B.	Bengal,..			
ZINGIBERACEÆ.					
Zingiber (ginger,) several species,	Adraka, B.	Bengal,..	roots, ...	..	B. D. 647, A. i. 603, Rx. i. 47, Rl. 357.
Kæmpferia Galanga, and other species, ...	Chundra moola, Booi champa, B.	Bengal,..	root, ...	..	B. D. 650, A. i. 489, ii. 146, Rx. i. 15, 16, Rl. 357.
Amomum Cardamomum, and other species, ...	Elachi, H.	Bengal,..	fruits, ...	..	B. D. 650, A. i. 55, 152, 493, Rx. i. 20.
Elettaria, do.	....	Bengal,..	roots, ...	..	B. D. 652, A. i. 140, Rx. i. 59, Rl. 358.
Alpinia Galanga, ...	Koolinjan,.....				
AMARYLLIDEÆ.					
Crinum asiaticum, ...	Kanoor, H.	Bengal,..	bulbous stems, ..	..	B. D. 655, A. ii. 464, Rx. ii. 134, Rl. 374.
MELANTHACEÆ.					
Colchicum autumnale and other species—Hermodactyl, ...	Soorinjan tulk, H.	Europe, Persia, ..	cormi and seeds,	..	B. D. 658, Rl. 385.
Scilla maritima, squill, ...	....	Europe, ...	bulb, ...	..	B. D. 662.

Musk, product of, ...	musk deer, *moschus moschiferus*, of Nipal.
Castor, ...	beaver, *castor fiber*, of Canada.

Inorganic Substances.

Antimony, several preparations of, ...	especially *tartar-emetic*.
Carbonate of ammonia, ...	
Acetate of ammonia, ...	
Citrate of ammonia, ...	
—— of potash, ...	
Water, in vapour and bath, ...	
Sulphur, ...	
Sulphuret of potash, ...	
Mercury, several preparations of, ...	especially *calomel* and *blue pill*.

EXPECTORANTS. B. D. p. 134.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
ZYGOPHYLLEÆ.					
Guaiacum officinale (Guaiac,) ..	.. ..	Jamaica, ...	wood and resin, ..	.. ..	B. D. 258.
UMBELLIFERÆ.					
Dorema Ammoniacum, ammoniacum plant, ...	Oshak, Pers.	Persia, ...	gum resin, ..	.. ..	B. D. 364, A. i 604, Rl. 231.
SOLANEÆ.					
Datura Stramonium, and other species, ...	Datoora, B.	Bengal, ...	dried stems and seeds smoked,	Daturia, ..	B. D. 468, A. i. 443, 446, Rx. i. 561, Rl. 279.
CINCHONACEÆ.					
Cephaelis Ipecachuanha, and other genera, ...	.. ..	New Granada, ..	roots, ...	Emetine,	B. D. 379.
SCROPHULARINEÆ.					
Digitalis purpurea, purple foxglove, ...	.. ..	Europe, ...	dried leaves, ..	.. ..	B. D. 474.
STYRACINEÆ.					
Styrax Benzoin, Benjamin tree, ..	The resin, Looban, H. ..	Sumatra, Borneo, &c.	resinous product,	.. ..	B. D. 430, Rl. 261, A. i. 33, Rx. ii. 416.
CHENOPODEÆ.					
Chenopodium Botrys, Jerusalem-oak, ...	.. ..	South of Europe, upper India, ...	whole plant, ..	.. ..	Rl. 318, B. D. 524.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
ARISTOLOCHIEÆ.					
Aristolochia Serpentaria, longa, and other species, ...	.. ..	North America, West Indies, ...	root, ...	.. ..	B. D. 567.
AMARYLLIDEÆ.					
Crinum asiaticum, ...	Kanoor, H.	Bengal, ...	bases of leaves, ..	.. ..	A. ii. 464, Rl. 374, B. D. 655.
LILIACEÆ.					
Scilla maritima, squill, and other species, ...	.. ..	Europe, ...	bulbs, ...	.. ..	B. D. 662.

Under this head may be included, with reference to corresponding and appropriate morbid states of the system, all remedies capable of allaying inflammation and irritation, especially the sedative narcotics, (ex. opium); emetics and nauseants, and especially Ipecachuanha; the warm aromatic stimulants, (ex. Polygala Senega, and Guaiacum.) Demulcents and Emollients, Diuretics and Cathartics, in most cases interfere with the action of expectorants.

ANIMAL KINGDOM.

MUSK, Product of, ... Musk Deer, Moschus moschiferus.
CASTOR, ... Beaver—Castor fiber.

INORGANIC EXPECTORANTS.

These are chiefly, the vapours of water, weak spirit, ammonia, of volatile oils, Chlorine and Iodine.
The acetate of ammonia.
Tartarized antimony.

EMETICS. B. D. p. 136.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
PAPAVERACEÆ.					
Sanguinaria canadensis, puccoon, ...		North America, ..	red juice of the root, ..	....	B. D. 184.
CRUCIFERÆ.					
Sinapis, mustard, several species,	Rai, Surson, B.	Bengal, ...	flour of seeds, ..	....	B. D. 189, A. i. 615, Rl. 69, Rx. iii. 117.
VIOLACEÆ.					
Viola odorata, scented violet and other species, ...	Banopsha, H.	Himalayas, ...	dried plant and roots, ..	....	B. D. 208.
Ionidium suffruticosum, shrubby Ionidium, ...	.. ..	South America, ..	root, ...	....	B. D. 209, Rx. i. 649, A. ii. 267, Rl. 74.
MELIACEÆ.					
Melia Bukain, or sempervirens Evergreen melia, ...	Ban, Azad i durakht, maha nimba. The seeds, Hubul ban, ...	N. W. of India, ..	seeds, ...	....	B. D. 245, A. i. 453, Rx. ii. 393, Rl. 141.
Guarea trichilioides, ...	.. ..	South America, ..	bark, ...	....	B. D. 246.
AQUIFOLIACEÆ.					
Ilex vomitoria, ...	.. ..	Florida and Carolina, ..	decoction of root and stems, ..	....	B. D, 372.
CUCURBITACEÆ.					
Luffa amara, ...	Kerula, B.	Bengal, ...	ripe seed, ..	....	B D. 316, Rl. 219, Rx. iii. 715.
CINCHONACEÆ.					
Cephaëlis Ipecacuanha, Ipecacuanha plant, ...	.. ..	New Granada, .. Brazil, ...	the roots, ..	Emetine,	B. D. 379.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Psychotria emetica, emetic Psychotria, ...	.. ..	New Granada, Brazil,	the roots, ..	Emetine,	B. D. 379. [713, A. ii. 185.
Richardsonia braziliensis, Brazilian Richardsonia, ...	.. ..				
Randia (or Gardenia) dumetorum,	Muenphul, H.	Bengal, Coromandel, ..	the fruit and root,	....	B. D. 399, Rl. 238, Rx. i.
Pæderia fœtida, ...	Gundale, B. Gunda badhali, H.	India, rather rare, ..	root, ...	....	B. D. 401, Rx. i. 683, Rl. 238.
SYNANTHEREÆ.					
Anthemis nobilis, chamomile, ...	Baboone, H.	Persia and Europe, ..	flowers, ..	....	B. D. 413, A. i. 67, Rl. 250.
LOBELIACEÆ.					
Lobelia inflata, Indian tobacco, ..	.. ..	United States, ...	powdered leaves and capsules, ..	Essential oil,	B. D. 423.
APOCYNEÆ.					
Cerbera Mangas, ...	.. ..	Botanic Gardens of Calcutta, ...	kernels, ..	....	B. D. 447.
Apocynum androsæmifolium, dog's bane, and other species, ...	.. ..	United States, ...	fresh roots, ..	....	B. D. 448.
Cynanchum (or Asclepias) Vincetoxicum, ...	.. ..	Europe, ...	powdered root, ..	....	B. D. 451.
Secamone, (or Periploca) emetica,	.. ..	South America, ..	roots, ...	....	B. D. 451.
Asclepias curassavica, ...	.. ..	West Indies, ...	stems, ...	....	B. D. 452.
Calotropis (or Asclepias) *gigantea*, mudar, and other species, ..	Akund, Ak, mudar, H. ..	India and Calcutta Gardens, ...	bark of root, ..	....	B. D. 452. A. i. 486, 7, 488, Rl. 273, Rx. ii. 30.
Tylophora (or Asclepias) *asthmatica*, ...	Untamol, H.	Common in Bengal, ..	dried roots, ..	....	B. D. 455, 233, Rl. 274.
SCROFULARINEÆ.					
Vandellia diffusa, ...	.. ..	Mauritius, ...	roots and stems,	....	B. D. 477.
ACANTHACEÆ.					
Gendarussa vulgaris, ...	Nela nergunda, S. Jugut mudun, B.	India in gardens, ..	dried plant, ..	....	B. D. 483, Rl. 297.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
NYCTAGINEÆ.					
Boerhaavia, several species of, ...		Guiana, Persia, Java,	root, ...	....	B. D. 512.
———— diffusa, ...	Gadha poorna, B. ..	Bengal, ...	root, ...	....	B. D. 512, A. ii. 205, Rx. 146, Rl. 312.
PHYTOLACCEÆ.					
Phytolacca decandra, Poke weed, ...		North America, ..	root, ...	....	B. D. 527.
EUPHORBIACEÆ.					
Euphorbia Cyparissias, ...					
———— Peplus, ...					
———— Gerardiana, ...		European species, ..	roots, ...	...	B. D. 565.
———— sylvatica, ...					
———— Ipecachuanha, ...					
Pedilanthus tithymaloides (Jew-bush,)	.. .. ..	West Indies, Calcutta Garden, ...	milky juice, in Bengal inert, ..	....	B. D. 566, Rl. 328.
ARISTOLOCHIÆ.					
Asarum europæum, Assarabacca,	Asaroon, G.	Europe and Persia, ..	dried leaves, ..	....	B. D. 569.
MONOCOTYLEDONEÆ.					
AMARYLLIDEÆ.					
Crinum asiaticum, ...	Kanoor, Sookh durson, H.	Bengal, Java, ...	bulbous stems and leaves, ..	....	B. D. 656.
Narcissus, species of, ...	.. ..	Europe,	bulbs, ...	....	B. D. 656.
MELANTHACEÆ.					
Veratrum viride, and other species,	.. ..	Europe, America, ..	roots and seeds, ..	....	B. D. 657.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
LILIACEÆ.					
Erythronium americanum, ...		America, ...	roots, ...	....	B. D. 661.
Scilla maritima, and other species, ...		Europe, India, ...	roots, ...	....	B. D. 662.

Note. Nearly all acrid vegetable poisons, and many of the drastic cathartics, act also as emetics, but not being used in medicine to produce this effect, we have excluded them from the preceding list.

INORGANIC EMETICS.

Water (tepid,) in copious draughts,
ANTIMONY, Potassio-tartrate of—*tartar emetic.*
COPPER, Sulphate of, ...
ZINC, Sulphate of,

☞ Many mineral poisons, for example—arsenic—produce violent vomiting, but they are not used as emetics.

PURGATIVES. B. D. p. 138.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
RANUNCULACEÆ.					
Helleborus niger, black Helleborc,	Kalikootkee, H.	Nipal, shores of the Red sea, ...	roots, ...	....	B. D. 168, A. i. 164, 606, Rl. 44.
——— fœtidus, ...	.. ..	Europe, ...	roots, ...	....	B. D. 169.
Pæonia officinalis, officinal peony,	.. ..	Europe, ...	roots, ...	....	B. D. 169.
Podophyllum peltatum, may apple,	.. ..	United States, ..	roots, ...	....	B. D. 170.
——— hexandrum, ..	.. ..	Himalayas, Kedarkanta,	roots, ...	....	B. D. 170, Rl. 64.
PAPAVERACEÆ.					
Chelidonium majus, great Celandine, ...	.. ..	Europe, ...	yellow juice, ..	....	B. D. 183, Rl. 121, 358.
Sanguinaria canadensis, Canadian blood root, ...	.. ..	N. America, ...	red juice, ..	....	B. D. 184.
CRUCIFERÆ.					
Lepidium sativum, ...	Haleem, B. Aliverie, H. ..	Cultivated in India, ..	the seeds, ..	....	B. D. 188, A. i. 95, Rx. iii. 116, Rl. 69.
BERBERACEÆ.					
Berberis Lycium, ...	The plant, Chitra, Kushmul,	Himalayas, Nipal, Botanic Garden, ..	bark and extract,	Berberine,	B. D. 203, Rl. 62, Rx. ii. 182.
——— aristata, barberry, species of, ...	The wood, Darhuld, Darchob, The extract, Rusot, Hoosizhindee, H.				
LINEÆ.					
Linum catharticum, purging flax,	.. ..	Europe, ...	leaves, ..	....	B. D. 213.
HYPERICINEÆ.					
Vismia guianensis, American gamboge tree, ...	.. ..	America, ...	yellow concrete juice, ..	....	B. D. 234.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	principle.	References.
GUTTIFERÆ.					
Hebradendron Gambogioides, ..	Mukki, *Tam.*	Siam, Ceylon, India, ..	yellow concrete juice,* ..	....	B. D. 235.
——— *pictorum?* ..					
Stalagmites ovalifolia, ...					
Stal: or (Xanthochymus) *pictorius*, supposed sources of Gamboge, ..					
RHAMNEÆ.					
Rhamnus catharticus, Buckthorn, ...		Europe, ...	berries, ..	....	B. D. 273.
MORINGEÆ.					
Moringa pterygosperma, Indian Ben tree, ...	Sobhanjuna, B.	India, ...	oil of, ...	....	B. D. 289, Rl. 13, 180, Rx. ii. 368, A. i. 175.
LEGUMINOSEÆ.					
Colutea arborescens, bladder senna, ...		Upper Egypt, ..	leaves of, ..	....	B. D. 294.
Alhagi maurorum, (camel's thorn,)	Shutrkar, H. its manna, *turanjabin, H.*	Asiatic and African deserts, ...	manna of, ..	....	B. D. 295, Rl. 191.
Agati grandiflora, ...	Buka, S. B.	Common in India, ..	leaves, ..	....	B. D. 296, Rx. iii. 331, Rl. 191.
Andira inermis, cabbage tree, ..					
——— surinamensis, ...	.. ..	West Indies, ...	bark, ...	....	B. D. 303.
Cathartocarpus, (or cassia) *Fistula*, ...	Soonali, B. Amultas H. ..	India, Egypt, ..	pulp of pods, ..	....	B. D. 305, A. ii. 61, Rl. 13, Rx.
Cassia elongata, ...	Senna mekhi, H. ..	Naturalized in the interior of India, ..	leaves, ..	....	B. D. 306. [ii. 333.
		.. ..	.. .. ..	....	B. D. 307.
——— *acutifolia*, Alexandrian senna, ..	.. ..	Cultivated in India, ..	.. .. ..	....	B. D. 309.
——— *lanceolata*, lance-leaved Senna, ..	.. ..	Bengal, ...	leaves and young shoots, ..	....	B. D. 309, Rl. 184, Rx ii. 343.
——— occidentalis	.. ..				

* We have received a fine specimen of the Ceylon Gamboge from General Walker, and found it equal to the best Siamese article in cathartic effects.

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Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Tamarindus indica, tamarind, ..	Tinteree, S. Umli, H. ..	Bengal, ...	pulp of fruit, ..	....	B. D. 315, A. i. 425, ii. 327, Rl. 183, Rx. iii. 215.
Clitorea Ternatea	Upurajita, B. Kalſjer kejur, H.	Bengal, ...	alc. extr. of root,	....	B. D. 316, A. ii. 139, Rl. 191, Rx. iii. 321.
Cytisus scoparius, common broom,	.. ..	Europe, ...	young tops, ..	....	B. D. 317.
Coronilla picta, ...	Krishna rajam, B. ..	Bengal, ...	leaves, ...	....	B. D. 317, Rl. 195, A. ii. 64.
Lathyrus sativus, ...	Khesaree, Teora, B. ..	Bengal, ...	oil of seeds, ..	....	B. D. 317, Rl. 200, 190, Rx. iii. 327.
Poinciana pulcherrima, ...	Krishna choora, B. H. ..	Bengal, ...	bruised leaves, ..	....	B. D. 324, Rl. 183, A. ii. 148, Rx. ii. 355.
ROSACEÆ.					
Prunus domestica, prune, ..	.. ..	Europe, Asia Minor, ..	dried fruit, ..	....	B. D. 325.
Brayera anthelmintica, ...	.. ..	Europe, America, ..	root, ...	....	B. D. 326.
MYRTACEÆ.					
Barringtonia racemosa, ...	.. ..	Malabar, ...	the root, ...	....	B. D. 337, Rx. ii. 634
COMBRETACEÆ.					
Terminalia Chebula, chebulic myrobalon tree, ...	Zenge Har, B.	Bengal, Mysore, ..	unripe dried fruit,	....	B. D. 340, A. i. 237, ii. 128.
——— citrina, ...	Liba, S. Harria, B. ..	Bengal, ...	fruit, ...	....	B. D. 340, Rl. 209.
CUCURBITACEÆ.					
Lagenaria vulgaris, bottle gourd, ..	Toombee, B.	Bengal, ...	wild fruit, ..	....	B. D. 343, Rl. 218.
Cucumis Colocynthis, bitter apple,	Indrain, Bisloombi, H. ..	Coromandel, Delhi, Guzerat, ...	fruit, pulp of, ..	....	B. D. 344, A. i. 84, Rl. 218, Rx. iii. 719.
——— and other species, ..					
Luffa amara, ...	Kerula, H.	Common in Bengal, ..	fruit, ...	....	B. D. 346, Rx. iii. 715, Rl. 212.
Bryonia dioica, ...	.. ..	Europe, ...	root, ...	....	
——— epigœa, ...	Rawkus Gadda, H. ..	Bengal, ...	root in powder, ..	....	B. D. 347.
——— scabra, ...	Musmusa, D.	Indian plains, ..	shoots and leaves,	....	B. D. 348, A. ii. 212.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Momordica Elaterium, squirting gourd, ...	.. ..	Europe, ...	elaterium, deposit from juice, ..	elatin, ..	B. D. 348.
Trichosanthes dioica, ...	Pulwul, B.	Bengal, ...	alc. extr. of fruit,	....	B.D. 350, Rx. iii. 701, A. ii. 297, Rl. 219.
PARONYCHIEÆ.					
Trianthema obcordata, ..	Punarnavi, S. Nasurginghi, H.	Bengal, ...	bark of roots and the root in powder, ...	....	B. D. 353, Rl. 221.
——— decandra, ...	Beeskupra, H Sufed punarnava, S.				
UMBELLIFERÆ.					
Astrantia major, ...	.. ..	Europe, ...	roots, ...	....	B. D. 356.
Eryngium campestre (Eryngo,) ..	.. ..	Europe, ...	roots, ...	....	B. D. 356.
Laserpitium glabrum, ...	.. ..	Mountains of Europe, ..	roots, ...	....	B. D. 368.
ARALIACEÆ.					
Hedera Helix, the ivy, ...	.. ..	Europe, ...	the berries, ..	....	B. D. 372.
CAPRIFOLIACEÆ.					
Triosteum perfoliatum, fever root,	.. ..	America, ...	bark of root, ..	....	B. D. 377.
Sambucus Ebulus, dwarf elder, ..	.. ..	Europe, ...	inner bark, ..	....	B. D. 377.
CINCHONACEÆ.					
Randia, (or Gardenia) dumetorum,	Muenphul, H.	India generally, ..	alc. tinct, or extr. of the root, ..	....	B. D. 399, A. ii. 185, Rx. i. 713.
Gardenia campanulata, ...	.. ..	Chittagong, ...	root, ...	....	B. D. 400.
Chiococca densifolia, ...	.. ..	Brazil, ...	root, ...	....	B. D. 401.
SYNANTHEREÆ.					
Taraxacum officinale, (Dandelion) ..	.. .. ..	Europe, Himalaya, ..	inspissated juice,	....	B. D. 407.
Carthamus tinctorius, safflower plant, ...	Koosum, B.	India, Dacca, ..	seeds, ...	....	B. D. 411, Rl. 258, A. ii. 284, 364, Rx. iii. 409.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
JASMINEÆ.					
Fraxinus, *Ornus*, Ash trees, several species of, ...	.. ..	Europe, especially Sicily, ...	manna of, ..	....	B. D. 434.
Fraxinus excelsior, ...	.. ..	Europe, ...	leaves of, ..	....	B. D. 435.
APOCYNEÆ.					
Cerbera Mangas,			kernels, leaves &		
—— Ahovai, ...	.. ..	East Indies, ...	milky sap, ..	....	B. D. 447.
—— Thevetia, ...	.. ..	.. .. ..	bark, ...	....	B. D. 447.
Allamanda cathartica, ...	....	Calcutta Garden, intd. by Lord Auckland, ..	the leaves, ...	....	B. D. 448, A. ii. 9.
Hasseltia arborea, ...	....	Java, ...	milk, ...	....	B. D. 449.
Plumieria, several species of, ...	....	West Indies, Pinjore valley, ...	roots and leaves,	....	B. D. 449.
ASCLEPIADEÆ.					
Cynanchum monspeliacum, Montpelier scammony, ...	....	South of France, ...	resinous product,	....	B. D. 450.
—— Argel, ...	....	Upper Egypt, ...	leaves, ...	....	B. D. 450.
—— Vincetoxicum, ...	....	South of Europe, ...	powder of root, ..	....	B. D. 451.
Secamone Alpini, ...	....	South of Europe, ...	root, ...	....	B. D. 451.
Asclepias curassavica, ...	....	West Indies, ...	roots, ...	....	B. D. 452.
GENTIANEÆ.					
Spigelia marylandica, Indian pink, ...	....	South America, ...	roots, ...	....	B. D. 457.
SCROPHULARINEÆ.					
Gratiola officinalis, hedge hyssop, ...	....	Europe, ...	tops and shoots, ..	....	B. D. 476.
VERBENACEÆ.					
Verbena jamaicensis, Jamaica vervein, ...	....	Jamaica, ...	expressed juice,	...	B. D. 484.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
CONVOLVULACEÆ.					
Convolvulus Scammonia, Scammony plant, and other species,	resinous product, Sugmoonia, A.	Levant, Guzerat, ...	resinous exudation, ...	..	B. D. 501.
Ipomea Jalapa, Jalap plant, ..	....	South America, Mexico,	powdered root, ..	..	B. D. 502.
—— Mechacuanha, ...	....	Mexico, and Brazil, ..	root, ...	..	B. D. 503.
—— Turpethum, ...	Teoree, B.	Bengal, ...	bark of root, ...	..	B. D. 504, Rl. 308, Rx. i. 476, A. ii. 308.
Batatas paniculata, ...	Bhoomi koomra, B.	East Indies, ...	root, ...	..	B. D. 505.
Pharbitis, (or Ipomea) *cærulea*,	Merchai, H. seeds, kaladana Hub ul nil, A.	Bengal, ...	seeds, ...	..	B. D. 505. Rl. 308.
PRIMULACEÆ.					
Cyclamen hederaceum, sow bread,	....	Europe, ...	leaves, ...	..	B. D. 507.
GLOBULARIACEÆ.					
Globularia Alypum, ...	....	South of France, ...	roots, ...	..	B. D. 507.
NYCTAGINEÆ.					
Mirabilis Jalapa, marvel of Peru,	Gul Abbas, H. Krishna Keli, B.	Gardens of Bengal, ...	root in powder, ..	..	B.D. 511, A. ii. 284. Rl. 312.
Boerhaavia tuberosa, Hog weed, ..	Sindika, S. Tikri ke jur, H.	India, ...	roots, ...	..	B.D. 512, Rl. 312, Rx. i. 146.
POLYGONEÆ.					
Rheum, Rhubarb, several species,	Rewund, H.	Himalayas, Thibet, Siberia, China, Europe,	roots, ...	..	B, D. 513 to 522, A. i. 624,
Rumex alpinus, ...	....	Alps, Caucasus, ...	roots, ...	..	B D. 522. [Rl. 313.
Polygonum aviculare, knot grass,	....	Behar, ...	plant and roots, ..	..	B. D. 522.
SALVADOREÆ.					
Salvadora indica, ...	Nisomale, S. Jal, H. Irak, P. leaves, Rasuna, ...	Banks of the Jumna, ..	the leaves, ...	..	B.D. 527, Rl. 319, Rx. i. 389.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
HERNANDIACÆ.					
Hernandia sonora, ...	Bongko, *Jav.*	East and West Indies,	kernel of seed, ..	....	B. D. 537, A. ii. 42.
EUPHORBIACEÆ.					
Cicca disticha, or Phyllanthus longifolia, ...	Cheramella, or Huriphul, B. Hurfarori, B.	India, ...	seeds, ...	....	B.D.551, Rl.327, Rx. iii. 672.
Emblica officinalis, or Phyllanthus Emblica, ...	Umrita, Umlaku, S. Anola, B. H.	India, ...	recent fruit, ...	....	B. D. 551, Rx. iii. 671.
Croton Tiglium, croton oil plant,	Jayapala, S Jamalghota, B.	India, ...	seeds and oil, ...	....	B. D. 553, Rx. iii. 682, A. i. 101, Rl. 327.
——— Roxburghii, ...	Hakoon, H.	India, ...	seeds and oil, ...	....	B. D. 555.
Ricinus communis, castor oil plant,	Arendi, B. H.	India and Europe, ...	seeds and oil, ...	....	B. D. 556, Rx. iii. 689, Rl. 327, A. ii. 47.
Jatropha Curcas, physic nut, ...	Bag Barendi, B. H.	India, South of Europe, and America, ...	seeds and oil, ...	....	B. D. 558, A. ii. 45, Rx. iii. 688, Rl. 327.
——— multifida, coral plant, ..	....	Gardens in warm countries, ...	seeds and oil, ...	....	B. D. 553.
Acalypha indica, ...	Sufed Busunda, B.	Indian gardens, ...	roots, leaves, ...	....	B. D. 562, Rx. iii. 675, Rl. 327, A. ii. 161.
Euphorbia nereifolia, ...	Pata kari, S. Patteoon, D.	India, ...	expressed juice, ...	....	B.D.563, A. ii.97, Rx. ii. 467,
——— thymifolia, ...	Sufed Keerooi, B.	India, ...	juice of stalks & flowers, ...	....	B. D. 565. [Rl. 327.
——— Lathyris, spurge and several other species, ...	....	Europe, ...	seed and oil, ...	....	B. D. 566.
Aleurites trilobata, ...	....	Friendly Islands, Barackpore garden, ...	seeds, ...	....	B. D. 567.
ARISTOLOCHIÆ.					
Asarum europæum, ...	Dried plant, Asaroon, ...	Levant, Arabia, ...	dried plant, ...	....	B. D. 569.
CONIFERÆ.					
Pinus, several species of, especially *P. picea*, common fir of Europe, and *P. longifolia* of Himalayas,	....	Europe, America, Himalaya, &c. .... Kota, Nepal, ...	essential oil, or turpentine, ...	....	B. D. 614, 616.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
MONOCOTYLEDONEÆ.					
LILIACEÆ.					
Aloe barbadensis, ...	Extract Musabher, H.	Barbadoes, Socotora, Cape of Good Hope, India.	Extract and inspissated juice,	....	B. D. 665.
—— *socotrina*, ...					
—— *spicata*, ...					
—— *indica*, ...					

ANIMAL.

HONEY, produce of the Bee, *(apis mellifica,)* is gently laxative.

INORGANIC.

Oxide of MERCURY, Blue.
MERCURY, with magnesia.
—— with chalk.
Protochloride of mercury, CALOMEL,

SALTS.

MAGNESIA, *sulphate of*,
SODA, *sulphate of*,
—— phosphate.
—— tartrate.
—— & potash, tartrate of,
POTASH, bisulphate of,
—— sulphate.
—— bitartrate.
—— tartrate.
—— acetate.
ANTIMONY, precipitated sulphuret of,

DIURETICS. B. D. p. 139.

Classical and English names.	Usual Native Names.	Locality.	Part used.	Active Principle.	References.
FUMARIACEÆ.					
Fumaria officinalis, Fumitory, ...	Pitpapra, H.	Botanic Garden, ..	dried plant, ..	....	B. D. 184.
MENISPERMACEÆ.					
Cissampelos Pareira, wild vine, ..	....	South America, ..	root, ...	....	B. D. 200.
C. hexandra, ...	Neemooka, B.	Sylhet, ...	root, ...	....	B. D. 201, Rl. 61.
Cocculus cordifolius, ...	Gulancha, B.	Bengal, ...	root, and stems, ..	....	B. D. 198, Rx. iii. 811, Rl. 61.
DIPTEROCARPEÆ.					
Dipterocarpus lævis, ...	Tilea gurjun, B.	Bengal, Assam, Arracan, ...	balsam called gurjun oil, ..	....	B. D. 223. Rl. 106, Rx. ii. 612.
ZYGOPHYLLEÆ.					
Guaiacum officinale, Guaiac tree,	....	Jamaica and Hispaniola, ...	wood and resin, ..	....	B. D. 258.
RUTACEÆ.					
Barosma crenulata, (buchu,) ..	....	Cape of Good Hope,	leaves, ...	....	B. D. 262.
AIQUFOLIACEÆ.					
Ilex Aquifolium, Holly, ...	....	Europe, Himalayas, ..	root and barks, ..	....	B. D, 271.
Myginda uragoga, ...	....	Carthagena, ..	root in infusion, or decoction, ..	....	B. D. 272.
TEREBINTHACEÆ.					
Pistacia Terebinthus, chian turpentine tree, ...	Butum, *Arab.* Sukhur, *Per.*	Barbary, Greece, ..	resinous juice, ..	....	B. D. 277.
LEGUMINOSÆ.					
Copaifera officinalis, copaiba plant,	....	West Indies, ..	balsam of, ..	....	B. D. 311.
Cytisus scoparius, broom, ...	....	Europe, ...	young tops, ..	....	B. D. 316.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
CUCURBITACEÆ.					
Cucumis utilissimus, cucumber, ..	Kankoor, kurtee, B. Kakni, H.	India, ...	seeds in powder,	..	B. D. 343, Rl. 218, Rx. iii. 721.
UMBELLIFERÆ.					
Eryngium campestre, Eryngo, ...	....	Europe, ...	root, ...	..	B. D. 356.
Petroselinum sativum, Parsley, ..	....	Europe and the Levant,	leaves, ...	..	B. D. 357.
CINCHONACEÆ.					
Asperula odorata, Woodroof, ...	....	Europe, ...	the herb, ..	..	B. D. 373.
Palicourea, several species of, ...	....	Brazil, ...	leaves and roots,	..	B. D. 402.
SYNANTHEREÆ.					
Taraxacum officinale, dandelion,	....	Europe, Himalayas, ..	expressed juice,	..	B. D. 407.
Arctium Lappa, burdock, ...	....	Europe, ...	seeds and root, ..	..	B. D. 40.
Cacalia sonchifolia, ...	Shudimudi, B.	Malabar, ...	....	..	
—— *Kleinia*, ...	Gaozuban, H.	Levant, Guzerat, ...	leaves, ...	..	B. D. 420, A. ii. 213, 188, Rl. iii. 413.
ERICACEÆ.					
Erica vulgaris, common heath, ..	....	Europe, the Cape, ...	young plant, ...	..	B. D. 426.
SOLANEÆ.					
Solanum paniculatum, and other species, ...	....	Brazil, ...	fruits, ...	..	B. D. 463.
Nicandra physalodes, ...	....	Europe, ...	roots and seeds, ..	..	B. D. 466.
Physalis Alkekengi, (winter cherry)	....	Europe, ...	berries, ...	..	B. D. 467.
SCROFULARINEÆ.					
Digitalis purpurea, foxglove, ..	....	Europe, ...	leaves in powder,	..	B. D. 474.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
ACANTHACEÆ.					
Justicia Ecbolium, ...	Jati, H.	Indian forests, ...	plant, ...	..	B. D. 483, Rx. i. 114.
POLYGONEÆ.					
Polygonum Hydropiper, water pepper, ...	.. ..	Europe, ...	root, ...	..	B. D. 522.
——— barbatum, ...	Aatalari, *Tam.*	China, East Indies, Cape, ...	root, ...	..	B. D. 523, A. ii. 1, Rl. 313, Rx. ii. 289.
EUPHORBIACEÆ.					
Phyllanthus Niruri, ...	Sadee Hazar munee, B. ..	East Indies, and Bourbon, ...	root, ...	..	[Rx. iii. 659. B.D. 552, Rl. 327, A. ii. 150,
——— urinaria, ...	Hazar munee, B. ..				
Euphorbia neriifolia, ...	Yerra userekee, B. Patteoon, D. Patikari, S. ..	Bengal, ...	leaves, ...	..	B. D. 565, A. ii. 97, Rl. 328, Rx. ii. 467.
PIPERACEÆ.					
Piper Cubeba, cubebs, ...	Kubab chini, H.	Java, ...	berries, ...	..	B. D. 573.
CONIFERÆ.					
Pinus, pine, several species of, ..	.. ..	Europe, the Himalayas,	the essential oil turpentine, ...	..	B. D. 613, 14.
Juniperus communis, common juniper, ...	The berries, *Abhul Hoober*,	Europe, Himalayas, and Caubul, ...	the berries essential oil, & tincture of essential oil, ...	..	B. D. 619.
MONOCOTYLEDONES.					
LILIACEÆ.					
Scilla maritima, squill, and other species, ...	.. ..	Europe, America, ..	dried bulbs, ...	..	B. D. 662.
MELANTHACEÆ.					
Colchicum autumnale, meadow saffron, ...	.. ..	Europe, America, Persia	dried cormi, ...	..	B. D. 658.

Inorganic Diuretics.

Iodine.	Changes into Hydriodic acid, and is excreted as such in the urine.
Hydriodate of Potash.	
The mineral acids, (diluted,)	
Potash, Acetate, Citrate,*	
Carbonate, Bi-carbonate, Nitrate, Chlorate, Bi-tartrate,* *	
Soda, Carbonate, Bi-carbonate, Bi-borate, Acetate, ...	
Iron, Permuriate of, ...	
Mercury, several preparations of, ...	* * The salts of potash and soda with vegetable acids, change into carbonates in the circulation.
Alcohol, (diluted,)	
Nitric Ether, sweet spirits of, ...	

☞ Arsenic in very minute doses has been lately asserted to be a powerful diuretic.—It passes off by the urine, in which it may be easily detected, in all cases in which it has been used, either as a medicine or poison.

EMMENAGOGUES. B. D. p. 139.

Under this head we shall only notice the few substances which possess, or are believed commonly to have, a special tendency to restore the menstrual secretion.—The student should consult the remarks in the Dispensatory, p. 139.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
LEGUMINOSÆ.					
Poinciana pulcherrima, ...	Krishna choora, Kurish churrin, B. Gul i turah, H.	Bengal, ...	bruised leaves, ..	..	B. D. 317, A. ii. 148, Rl. 183, Rx ii. 355.
RUTACEÆ.					
Ruta graveolens, and other species,	Sudab, Lahoree hoormul, H.	Europe and India, ..	juice of the herb, volatile oil, ..	..	B. D. 260, Rx. ii. 374. A. i. 351, Rl. 156.
VALERIANEÆ.					
Valeriana officinalis, Valerian, ..	.. ..	Europe, ...	roots, ..	..	B. D. 402, Rl. 243, A. ii. 367. Rx. i. 163.
Nardostachys Jatamansi, (spike-nard,)	Balchur, Sumbul Hindee, H.	Himalayas, ...			
CHENOPODEÆ.					
Chenopodium olidum, fœtid goose-foot, ...	.. ..	Europe, ...	herb, ...	..	B. D. 524.
POLYGALEÆ.					
Polygala Senega, snake root, ..	.. ..	America, ...	root, ...	..	B. D. 209.
ARISTOLOCHIEÆ.					
Aristolochia longa, ...	Zurawund tuweel, H. ..	Europe and Levant, ..	roots, ..	..	B. D. 568. Rl. 330, A. ii. 299, Rx. iii. 489.
——— *Serpentaria*, ...	.. ..	North America, ..			
——— *rotunda*, ...	Zurawund mooderuj, H. ..	Levant, ...			

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Aristolochia bracteata, ...	Cattrabunga, S.	Coromandel, ...	roots, ..	..	B. D. 568, Rx. iii. 490, Rl. 329, A. ii. 4, 301.
—— *indica*, ...	Isarmel, H. Hari, S. ..	Bengal, ...			
SYNANTHEREÆ.					
Artemisia, worm wood, several species of, ...	Afsunteen, A. Duna, Murwa, Nagdowna, H. ..	Europe, ...	plants, roots, seeds,	..	B. D. 414, Rx. iii. 419, Rl. 250, A. ii. 194.
CONIFERÆ.					
Juniperus Sabina, savine, ..	.. ..	Europe, ...	Bruised herb,	..	B. D. 620.
—— *communis*, juniper, ..	The berries, Abhul, hoobur,	Himalayas and Cabul,	leaves, vol. oil, the berries, ..	..	B. D. 620.
GRAMINEÆ.					
Secale cornutum, or Sclerotium clavus (ergot of rye,)	.. ..	Europe and America, ..	the spurred grain,	..	B. D. 673.

ANIMAL KINGDOM.

Musk—produced by Musk Deer,
Castor —— by Beaver,

INORGANIC.

Preparations of IRON, especially the tincture of the muriate of the Peroxide. MERCURY, especially calomel and Plummer's pill.

PARTURIFACIENTS. B. D. p. 141.

Secale cornutum, or *Sclerotium clavus*, Ergot of Rye, (see last class.)

SIALOGOGUES. B. D. 141.

All acrid stimulants and spices, especially the following:—

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
SYNANTHEREÆ.					
Anthemis (or Anacyclus) *Pyrethrum*, ...	Akurkura, H.	Levant, ...	root, ...	..	B. D. 412.
CANELLEÆ.					
Canella alba, ...	....	Cultivated in Bengal, ..	leaf, ...	..	B. D. 239.
PIPERACEÆ.					
Piper Betle, (Pan leaf,)	Pan, H.	Bengal, ...	leaf, ...	..	B. D. 575, A. ii. 465, Rx. i. 158, Rl. 332.
SOLANEÆ.					
Capsicum annuum and *frutescens*, Cayenne pepper, Chillies, ..	Gach and Lal merich, H. ..	Bengal, ...	capsules, ...	..	B. D. 467, Rl. 280, A. i. 306, Rx. i. 573.
AROIDEÆ.					
Arum campanulatum, wake robin, ...	....	Europe, ...	leaves, ...	..	B. D. 624, A. ii. 464, Rl. 405, Rx. iii. 509.
—— orixense, Orissa arum, and several other species, ...	Ol, Kuchoo, B.	Bengal, ...	root and leaves,	..	B. D. 625, A. ii. 464, Rl. 405, Rx. iii. 503.

INORGANIC.

The preparations of MERCURY.
—— IODINE.
HYDROCYANIC ACID.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
RANUNCULACEÆ.					
Clematis, several species of, ..	....	Europe and India, ...	leaves, ...	..	B. D. 161, Rl. 44, 120, Rx. ii.
Anemone, several species of, ..	....	ditto, ditto, ...	leaves, ...	..	B. D. 161, Rl. 44. [670.
Knowltonia vesicatoria, ...	....	Cape of Good Hope, ..	leaves, ...	..	B. D. 161.
Ranunculus, several species of, ..	....	India, ...	leaves, ...	..	B. D. 161, Rl. 43, 53, Rx. ii. 671.
CRUCIFERÆ.					
Sinapis, mustard, several species of,	Rai Surson, B. ...	Europe and India, ...	flour of seeds, volatile oil, ...	..	B. D. 189, 191, A. i. 615, Rl. 69, Rx. iii. 117.
CAPPARIDEÆ.					
Polanisia, (or cleome) icosandra,	....	Cochin China, Bengal,	whole plant bruised, ...	..	B. D 286, Rl. 72.
CANELLEÆ,					
Canella alba, wild cinnamon, ..	....	South America, Botanic Garden, ...	leaves, ...	..	B. D. 239.
VITACEÆ.					
Vitis (or Cissus) carnosa, and other species, ...	Kusar, B.	Bengal, ...	bruised young plant, ...	..	B. D. 254, Rx. i. 409, Rl. 144.
TEREBINTHACEÆ.					
Semecarpus Anacardium, marking nut, ...	Bhalataka, S. B.	Mountains of India, ...	black juice of fruit, ...	..	B. D. 279, A. ii. 371, Rl. 174, Rx. ii. 83.
Anacardium occidentale, cashew tree, ...	Hidjelee Badam, B.	Lower Bengal, Hidjelee, ...	ditto, ...	..	B. D. 280, Rl. 175, Rx. ii. 312.
MORINGEÆ.					
Moringa pterygosperma, and other species, ...	Sohunjuna, H.	Bengal, ...	roots, ...	..	[Rx. ii. 368. B. D. 286, A. i. 175, Rl. 180,

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active Principle.	References.
LEGUMINOSÆ.					
Mucuna pruriens, Cowhage, ...	Kiwach, H. B.	Bengal, ...	hairs of pods, ...	..	[93, Rx. iii. 283.
Arthrolobium scorpioides, ...	....	Europe, ...	leaves, ...	..	B. D. 297, Rl. 191, 329, A. i. B. D. 317.
SALICARIÆ.					
Ammannia vesicatoria, ...	Dadmaree, Bunmurich, B.	Bengal, ...	leaves and young plant, ...	..	B. D. 331, A. ii. 92, Rl. 213, Rx. i. 426.
MYRTACEÆ.					
Caryophyllus aromaticus, clove, ..	Long, H.	Moluccas, ...	essential of fruits,	..	B. D. 334.
Melaleuca Cajeputi, cajeput tree,	the oil, Kyapooti ke tel, H.	Banda, &c.	essential oil of leaves, ...	..	B. D. 336, Rl. 216, A. i. 259, Rx. iii. 394.
APOCYNEÆ.					
Vinca parviflora, or pusilla, ...	....	Bengal, ...	bruised leaves, ..	..	B. D. 448, Rx. ii. 1, Rl. 270, A. ii. 358.
SOLANEÆ.					
Capsicum annuum, and other species, ...	Gach mirich, Lol mirich, Lunka mirich, B. H. ..	Bengal, ...	Capsules, ...	..	B. D. 467.
PLUMBAGINEÆ.					
Plumbago europea, ...	Lal chitra, H.	Europe, Bengal, ...	recent roots in a paste with water,	..	B. D. 508, Rl. 311, A. ii. 77, 379 Rx. i. 463.
——— *zeylanica*, ...					
——— *rosea*, and other species,					
POLYGONEÆ.					
Polygonum Hydropiper (water pepper,)	.. .. ..	Europe, ...	....	..	
Polygonum barbatum, ...	Sufed panee merich, B...	Bengal, ...	leaves, ...	..	B. D. 513, 522, A. ii. 1, Rl. 316, Rx. ii. 289.
——— pilosum, ...	Burra paneé merich, B...				
——— flaccidum, ...					

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
SALVADOREÆ.					
Salvadora persica, ...	Piloo, kurjal, H. ..	India, Arabia, &c.	bark of root, ...	..	[i. 389, Rl. 319. B. D. 526, A. ii. 26, 266, Rx.
——— indica, ...	Irak, P. Jal, H. ..	do.	bark of root, ...	..	B. D. 527.
THYMELEÆ.					
Daphne Mezereon, and other species, ...	Mazrioon, P.	Europe, Levant, ...	bark, ...	..	B. D. 530.
Dirca palustris, ...	.. .. ..	United States, ...	bark, ...	..	B. D. 531.
EUPHORBIACEÆ.					
Croton Tiglium, ...	Jamalghota, B.	Bengal, ...	oil causes a pustular eruption,	..	B. D. 553, A. i. 101, Rl. 327, 275, Rx. iii. 682.
Tragia involucrata, ...	Bichuttee, B.	Bengal, ...	the resin Euphorbium, ...	..	A. ii. 61, Rl. 328, Rx. 3, 476.
Hippomane Mancinella, machineal, ...	....	Arabia, Africa, ...	....	..	B. D. 564.
Euphorbia officinarum, ...	Farfyoon, A. Saynd ke doodh, H.	South America, ...	milky juice, ...	...	B. D. 562.
Excœcaria Agallocha, ...	Ugooroo, B.	Sunderbunds, ...	resinous juice, ..	..	B. D. 563, A. ii. 438, Rl. 328, 171, Rx. iii. 756.
Euphorbia, several species, ...	Sij, B.	Bengal, ...	roots and milky juice, ...	..	B. D. 565, Rl. 328, A. i. 129, ii. 425, Rx. ii. 468.
URTICEÆ.					
Urtica dioica, common nettle, ...	....	Europe, ...	glands and hairs of leaves, ...	..	B. D. 579.
CONIFERÆ.					
Pines, several species of, ...	....	Europe, and Himalayas,	essential oil and turpentine, ...	..	B. D. 613, 616, Rl. 349, Rx. iii. 651, A. i. 458.
MONOCOTYLEDONES.					
AROIDEÆ.					
Arum, several species of, ...	Kuchoo, B. H. ...	Europe, Egypt, India,	roots, ...	..	B. D. 624, Rx. iii. 503, A ii. 463, Rl. 405.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
ANIMAL KINGDOM.					
Cantharis vesicatoria, Blistering beetle, ...	....	Europe, Russia, ...	powdered fly, tincture of, ..	..	B. D. 681.
Lytta cærulea, ...	Telini, H.	Bengal, especially, Dacca, Hydrabad, &c. ..	do.	..	B. D. 681.
Meloe Trianthemæ, ... or *Mylabris Cichorii*, ...					

Inorganic Epispastics, &c.

Hot Water,
Alcohol,
Acetic Acid,
Ammonia, solution of,
Tartrate of Antimony and Potash,
Citrate of Antimony, ... } Produce an eruption of pustules.
Hydriodate of Potash, ...

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
RANUNCULACEÆ.					
Nigella sativa, small fennel flower,	Mugrela, B. Kalajira, S. ..	Cultivated in India, ..	seeds and essential oil, ..	..	B. D. 164, A. i. 128, Rx. ii. 646, Rl. 55.
PAPAVERACEÆ.					
Papaver somniferum, Poppy, ..	Opium, Posht, Ufyoon, H.	do.	concrete juice, small doses, ..	..	B. D. 171, Rl. 119, A. ii. 339, Rx. ii. 571.
CRUCIFERÆ.					
Sinapis, Mustard, several species of	Rae, B.	do.	flour of seeds, ..	..	B. D. 191, A. i. 615, 230, Rx. iii. 117, Rl. 69.
MAGNOLIACEÆ.					
Ilicium anisatum, Star anise, ...	Badian Kutai, H.	China, Japan, ..	capsules & essential oil, ..	..	B. D. 191, Rl. 48, A. ii. 18.
Wintera aromatica, Winter's bark,	.. .. ..	Magellan, ...	bark, ...	..	B. D. 192.
Magnolia glauca, Swamp sassafras, and other species, ...	....	America, Sylhet, Nepal,	bark, ...	..	B. D. 193.
Liriodendron tulipiferum, tulip tree	....	America, ...	bark, ...	..	B. D. 193.
Michelia Champaca, champac, ..	Champa, B.	Bengal, ...	bark, ...	..	B. D. 193, Rl. 59, Rx. ii. 658.
ANONACEÆ.					
Uvaria Narum, ...	.. ..	Mauritius, ...	roots, ...	..	B. D. 193.
Habzelia, several species of, Ethiopean pepper, ...	.. ..	Africa, ...	capsules, ...	..	B. D. 194.
CAPPARIDEÆ.					
Capparis sinaica, Sinai caper, ..	buds, filfil jibbel, A.	Sinai, ...	fruits, ...	..	B. D. 206, Rl. 73

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Cratæva religiosa, ...	leaves, Bel ka pat, H.	India, ...	leaves, ...	..	[Rx. ii. 571.
Cleome viscosa, ...	Hoorhoorya. H. the seeds, Choori ajwain, H.	India, ...	seeds, ...	..	B. D. 207, Rl. 72, A. ii. 459, B. D. 207, A. ii. 223, R. 72.
MALVACEÆ.					
Abelmoschus moschatus, Musk hibiscus, ...	seeds, Hubb ul musk, Ar..	Arabia, Bengal, ..	seeds, ...	..	B. D. 217, Rl. 83, A. ii. 72, 335, Rx. iii. 202.
DIPTEROCARPEÆ.					
Dryabalanops Camphora, camphor tree, ...	....	Borneo, &c.	camphor, ..	..	B. D. 220, A. i. 49, Rl. 106.
AURANTIACEÆ.					
Citrus medica, citron, -	....	Asia, Europe, ...			
——— *Limonum*, lemon, ..	Neboo, B.	do.	Essential oil		
——— *Limetta*, sweet lime, ..	.. ..	do.	rind, and	..	B. D. 230, Rl. 129, Rx. iii.
——— *Aurantium*, sweet orange,	Narungu, Kumla, H.	do.	juice, ..		390, A. i. 281, 193.
——— *vulgaris*, bitter orange, ..	.. .. ..	do.			
Bergera Königii, ...	Bursunga, S. Kristna nimboo, B.	Bengal, ...	leaves, ...	..	B. D. 232, A. ii. 139, Rx. ii. 375, Rl. 129.
Feronia Elephantum, Wood-apple, ...	Kathbel, B.	Bengal, ...	fruit, leaves, flowers, ...	..	B. D. 233, Rx. ii. 411, Rl. 129, A. i. 161, ii. 82.
Ægle Marmelos, ...	Bilva, S.	Bengal, ...	fruit, ...	..	B. D. 234, A. ii. 188, Rl. 129.
GUTTIFERÆ.					[Rx. ii. 606.
Callophyllum Inophyllum, ..	Sultana champa, H. ..	India generally, ..	fixed oil, ..	..	B. D. 238, Rl. 133, A. ii. 310,
Mesua ferrea, ...	Nagkesur, H.	do.	dried anthers, flowers, leaves,	..	B. D. 239. Rl. 133.
CANELLEÆ.					
Canella alba, Wild Cinnamon, ..	.. .. ..	South America, Botanic Garden, ...	bark, leaves, essential oil, ..	..	B. D. 239.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
BALSAMIFLUÆ.					
Liquidambar Altingia, ...	Rasamala, Malay, ..	Java, ...	bark, ...	..	B. D. 255.
——— orientale, ...	.. .. ..	Cyprus, Levant, ..	bark, ...	..	B. D. 255.
RUTACEÆ.					
Galipea Cusparia, ...	.. .. ..	South America, ..	bark, ...	..	B. D. 261.
XANTHOXYLACEÆ.					
Xanthoxylum alatum, and several other species, ...	Durmur, H. the capsules, tejbul, H.	Nipal, N. India, ..	whole plant and seeds, capsules,	..	B. D. 264, Rx. iii, 768, Rl. 132.
Ptelea trifoliata, ...	....	United States, ..	fruit, leaves, ..	..	B. D. 265.
Toddalia aculeata, ...	Kaka toddali, *Tel.* ..	Coromandel, ..	fresh bark, ..	..	B. D. 265, Rl. 157, Rx. i, 617.
AQUILARMEÆ.					
Aquilaria Agallocha, aloes wood,	Ugooro, S. Aood Hindee. H.	Sunderbunds, ..	wood, ...	..	B. D. 275, Rl. 172, Rx. ii, 422.
TEREBINTHACEÆ.					
Protium gileadense, ...	the balsam, Roghen Bulsan,	Arabia, Bot. Garden, ..	Balsam of Gilead,	..	B. D. 284.
——— *Kataf*, myrrh tree, ..	gum resin, Heera Bol, H...	Arabia, ...	myrrh, ...	..	B. D. 285.
Commiphora madagascarensis, googul tree, ...	product, googul, H. ..	Assam, Sylhet, ..	googul resin, ..	..	B. D. 287.
Canarium commune, Indian elemi, ...	.. ..	India, ...	Balsam of, ..	..	B. D. 288, A. ii, 60, Rx. ii, 383. Rl. 177.
MORINGEÆ.					
Moringa pterygosperma, ..	Sobhanjuna, H.	India, ...	roots in pulp, ..	..	B. D. 289, Rl. 180, Rx. ii, 368, A. i. 175.
LEGUMINOSÆ.					
Myrospermum peruiferum, ..	.. .. ..	South America, ..	balsam of Peru,	..	B. D. 290.
——— *toluiferum*, ...	.. .. ..	South America, ..	balsam of Tolu, ..	..	B. D. 291.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Trigonella Foenumgræcum, fenugreek, ...	Metheshak, H. Hulbeh, A.	India, ...	seeds, ...	..	B. D. 291, A. i. 130, Rx. iii. 389, Rl. 190, 197.
Dipterix odorata, Tonquin bean, ..	.. .. ..	Guiana, ...	beans, ...	..	B. D. 305.
Aloexylon Agallochum, aloes wood one kind of, ...	.. .. ..	Cochin China, ...	wood, ...	..	B. D. 315.
ROSACEÆ.					
Agrimonia Eupatoria, Agrimony, ..	.. .. ..	Europe, ...	dried plant, ..	..	B. D. 325.
——— nipalensis, ...	.. .. ..	Nipal, ...			
Rosa centifolia, rose, ...	Gul, H.	Cultivated at Ghazeepore, ...	essential oil, attar, ...	..	B. D. 327, Rl. 202, A. i. 345, Rx. ii. 513.
MYRTACEÆ.					
Myrtus communis, myrtle, ..	Belate mindhi, H.	Bengal, ...	leaves, ..	..	B. D. 333.
——— Pimento, allspice, ...	.. .. ..	South America, Botanic Garden, ...	berries, ..		
——— caryophyllata, clove myrtle, ...	.. .. ..	Cuba, Ceylon, ...	bark, ...	..	B. D. 334.
Caryophyllus aromaticus, clove tree, ...	Long, H.	Moluccas, &c. ..	dried flowers and berries, ..	..	B. D. 334, Rx. ii. 495, Rl. 217, A. i. 593.
Eucalyptus resinifera, Brown gum tree, ...	.. .. ..	Australia, Botanical Garden, ...	bark and leaves, ..	..	B. D. 336, A. i. 185, Rl. 217.
Melaleuca Cajeputi, cajeput, ..	Kyapooti, H.	Banda, Java, &c. ..	leaves, essential oil, ...	..	B. D. 337, Rl. 216, A. i. 259, Rx. iii. 394.
UMBELLIFERÆ.					
Apium graveolens, celery, ..	Kurufs, A.	Cultivated in Bengal ..	roots and seeds,	..	B. D. 357, Rl. 229, Rx. ii. 97.
——— involucratum, ...	Radunee, B. Ajmod, H. ..	do.	do. do.	..	B. D. 337.
Petroselinum sativum, Parsley, ..	.. .. ..	Europe, ...	seeds and roots,	..	B. D. 367.
Ptychotis coptica, coptic ammi, ..	.. .. ..	Egypt, Candia, ..	roots and seeds,	..	B. D. 357,
——— Ajwain, ...	Ajowain, B.	India, ...	seeds, ..	..	B. D. 357,
——— sylvestris, ...	Arab Ajowain, H. ..	North India, ...	seeds and plant,	..	B. D. 358, Rl. 228.
——— involucrata, ...	Aneeson, H. Chanoo, Radoni, B.	Cultivated in Bengal, ..	herb, as a substitute for parsley,	..	B. D. 358,

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Sison Amomum, ...	....	Europe, ...	fruit, ...	..	B. D. 358.
Carum Carui, caraway plant, ..	....	Europe, ...	seeds, essential oil	..	B. D. 358.
—— *nigrum*, ...	Zeera seeah, H.	Kunawur, ...	seeds, ...	..	B. D. 358, Rl. 229.
Pimpinella Anisum, anise, ..	Mahoree, B.	Egypt, Levant, ..	seeds, essential oil	..	B. D. 359.
Fœniculum vulgare, common fennel	....	Europe, ...	seeds, oil, ...	..	B. D. 360.
—— *dulce*, sweet fennel, ..	....	Europe, ...	seeds, oil, ...	..	B. D. 360.
—— *Panmorium*, ...	Sonf, Panmuhoree, H. ...	India, ...	seeds, oil, ...	..	B. D. 360, Rl. 229.
Athamanta cretensis, cretan carrot,	....	Europe, ...	seeds, ...	..	B. D. 360.
Meum athamanticum, ..	....	Europe, ...	seeds, ...	..	B. D. 361.
Archangelica officinalis, ..	....	N. Europe, ...	root and resin, ..	..	B. D. 361.
Opoponax Chironium, ...	resin, Juwashur, H.	Asia Minor, ...	gum resin, ..	..	B. D. 361.
Ferula Asafœtida, ...	resin, Hing, H.	Herat, ...	gum resin, ..	..	B. D. 362, A. i. 20, Rl. 231,
—— *Sagapenum*, ...	Sugafioon, H.	Asia Minor, ...	gum resin, ..	..	B. D. 363. [Rx. ii. 90.
Peucedanum oreoselinum, ..	.. .. ..	Europe, Caucasus, ..	whole plant, ...	..	B. D. 365.
Anethum Sowa, ...	Soya, B.	Cultivated in Bengal, ..	fruit, essential oil	..	B. D. 366, Rx. ii. 96, A. i. 109.
—— *graveolens*, (dill) ..	.. .. ..	Europe, Cape of Good Hope, ...	do.	..	B. D. 366.
Galbanum officinale, galbanum plant, ...	Gum resin; bireja, H. ..	Asia Minor, ...	gum resin, ...	..	B. D. 367.
Cuminum Cyminum, ...	Zeera suffed, H.	Egypt, ...	seeds and oil, ..	..	B. D. 367.
Coriandrum sativum, ...	Dunya, H...	Cultivated in Bengal, ..	seeds, oil, ...	..	B. D. 371, Rl. 228, Rx. ii. 94, A. i. 92.
VALERIANEÆ.					
Valeriana officinalis, valerian,	.. .. ..	Europe, ...	the root, ...	..	B. D. 403.
—— celtica, ...					
Nardostachys Jatamansi, spikenard, ...	Balchur, H.	Himalayas, ...			
SYNANTHEREÆ.					
Artemisia, worm wood, several species of, ...	Afsunteen, Nagdowna, H...	Europe, India, ...	seeds, plant, oil,	..	B. D. 414.
Achillea Millefolium, mifoil, ..	.. .. ..	Europe, ...	bark, oil, ...	..	B. D. 418.
Tanacetum vulgare, tansy, ..	.. .. ..	Europe, ...	whole plant, ...	..	B. D. 418.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
					[Rx. iii. 427.
Conyza balsamifera, ...	Soomboong, Javanese, ..	Java, ...	whole plant, ..	..	B. D. 418, A. ii. 306, Rl. 248,
Eupatorium Ayapana, ...	Ayapana, H.	Bengal, ...	plant, leaves, ..	..	B. D. 423, Rl. 250, A. ii. 35.
RHODORACEÆ.					
Ledum latifolium, Labrador tea, ..	....	N. America, ...	leaves, ...	..	B. D. 426.
STYRACINEÆ.					
Styrax officinalis, styrax tree, ..	resin, Ustoruk, H	Asia Minor, ...	gum resin, ..	..	B. D. 430.
—— *Benzoin*, Benjamin tree, ..	the resin, Looban, H.	Sumatra, Borneo, ...	Benzoin and acid,	..	B. D. 430.
JASMINEÆ.					
Olea fragrans, fragrant clove, ..	....	China, Japan, Bot. garden, ...	flower, ...	..	B. D. 433.
Jasminum officinale, jessamine, ..	Bela, B.	Bengal, ...	perfume for oils,	..	B. D. 436, A. ii. 52, Rx. i. 90, Rl. 268.
APOCYNEÆ.					
Alyxia stellata, ...	....	Malayan Archipelago,	the bark, ..	..	B. D. 448.
SOLANEÆ.					
Capsicum annuum, and other species, ...	Gach-mirich, Lal-mirich, H.	Bengal Garden, ...	capsules. ..	..	B. D. 467.
Nicotiana Tabacum, tobacco, ..	Tumbaco, H.	Bengal Garden, ...	the leaves, ...	..	B. D. 471.
CYRTANDREÆ.					
Didymocarpus aromaticus, ..	Kumkuma, Ranagovindhi, B.	Bengal, ...	leaves, ...	..	B. D. 478, Rl. 293.
VERBENACEÆ.					
Vitex trifolia, ...	Nishindha, H. the fruits, filfil burree.	India, ...	leaves, ...	..	B. D. 485.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
					[Rx. iii. 81.
Vitex Nigundo, ...	Nergundee, B. Filfil burree,	India, ...	leaves, ...	....	B. D. 485, A. ii. 210, Rl. 209,
Premna integrifolia, ...	Agnimantha, S.	India, ...	root and leaves,..	....	B. D. 486, Rx. iii. 70, Rl. 298, A. ii. 252.
LABIATÆ.					
Salvia officinalis, sage, ...	Salbia, } B. H.	Bengal, ...	....	....	A. i. 359, Rx. i. 145.
—— *bengalensis*, ...	Murtoo, }	Asia Minor, ..			
Rosmarinus officinalis, rosemary,	Ukleel ul jibbul, A.	Europe, ...	leaves and dried		
Teucrium chamædrys, germander.	....	Syria, ...	plant, ...	....	B. D. 488, Rl. 300.
Hyssopus officinalis, hyssop, ..	Zoofae gabis, A.	Europe, ...			
Lavandula vera, and several species, lavender, ...	....	Arabia, ...			
—— Stœchas, ...	Oosteechadoos, G.	Europe, ...			
Mentha piperita, peppermint, ..	....	India in gardens, ..	leaves,dried plant,		
—— *sativa*, mint, ...	Poodina, H.	Himalayas &gardens,	essential oil, dis-		
—— *viridis*, spearmint, ..	Pahari Poodina, H. ...	do.	tilled water, ..	....	B. D. 490, Rl. 301.
—— Royleana, ...	....	Europe, ...			
—— *Pulegium*, pennyroyal ..	....	Europe, ...			
Glechoma hederacea, ground ivy,	....	Europe, ...			
Marrubium vulgare, horehound,..	....	Syria, ...	do. do.	....	B. D. 490.
Origanum vulgare, marjoram, ..	Buklukt ul gezal, A.	Syria, ...			
—— Dictamnus, dittany, ..	....	Europe, ...	dried plant, ...	....	B. D. 491.
Thymus vulgaris, thyme, ...	....	Malabar,....	leaves, ...	....	B. D. 492, Rl. 302.
Anisomeles malabarica, cat mint,	Bootan kushum, H.	Bengal, ...	leaves, seeds, ..	....	B. D. 492, A. ii. 423.
Ocymum basilicum, sweet bazil, and several other species, ..	Kalee tulsee, H.	Penang, ...	dried leaf, ...	....	B. D. 493.
Uncertain, ...	Pucha pat, H.				
CONVOLVULACEÆ.					
Convolvulus scoparius, ...	....	Canary islands, ...	wood	....	
MYRUNEÆ.					
Embelia Ribes, ...	Baiberung, H. ...	Bengal, ...	berries, ...	....	B. D. 511, Rl. 265.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
POLYGONEÆ.					
Polygonum Hydropiper, and other species, ...	Panee merich, B.	Bengal, ...	leaves, ...	....	B. D. 523, Rl. 316.
SALVADOREÆ.					
Salvadora persica, ...	Piloo kurjal, Jal-Irak, H.	India, ...	roots, ...	....	B. D. 527, A. ii. 26, 266, Rl. 319, Rx. i. 389.
——— indica, ...					
THYMELEÆ.					
Daphne Mezereon, mezereon, and other species, ...	Mazrioon, P.	Europe, Nipal, ...	bark of stems, ...	....	B. D. 530.
Dirca palustris, ...	....	United States, ...	bark, ...	....	B. D. 531.
SANTALACEÆ.					
Santalum album, sandal, and other species, ...	Sundel suffed, H. Chandana, S.	India, Sandwich islands	wood and essential oil, ...	....	B. D. 533, A. i. 376, Rl. 322, Rx. i. 442.
MYRISTICEÆ.					
Myristica officinalis, nutmeg, and mace tree.	Nutmeg, Juephul, H. Jatiphali, S. Mace, Jawatri, H.	Moluccas, Banda, ..	nutmeg, mace, essential oil, fixed oil,	....	B. D. 53, A. i. 201, 249, Rl. 323, Rx. iii. 843.
——— tomentosa, male nutmeg,	....				
LAURINEÆ.					
Laurus nobilis, sweet bay, ...	the berries, Hub ul ghar, ..	Europe, Asia Minor, ..	berries, ...	....	B. D. 538.
——— Malabathrum, ...	leaves, Tej pata, bark, putruj, B. H.	Malabar, Coromandel, Darjeeling, ...	leaves, bark, ...	....	B. D. 539, Rx. ii. 297.
——— Culilawan, ...	Suleekhe, A.	Amboyna, ...	bark, ...	....	B. D. 539, Rl. 122, Rx. ii. 299 A. ii. 197.
——— *Cinnamomum*, cinnamon tree,	Bark, Darcheni, H.	Ceylon, ...	bark, essential oil,	....	B. D. 540, A. i. 72, ii. 145, Rl. 122, Rx. ii. 295.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Laurus Cassia, cassia tree, ...	....	Ceylon, Assam, North America, ...	bark, essential oil	..	B. D. 543, A. i. 58, Rx. ii. 297.
—— *Camphora*, camphor, ...	Camphor, Kupoor, H.	A species in Nepal, ..	wood & root, bark	..	B. D. 544, Rx. ii. 304, Rl.
—— *Sassafras*, ...	....	Japan, ...	camphor, ...	..	B. D. 545. [324.
Ocotea Pichurim, pichurim bean tree, ...	....	Venezuela, species in Sylhet, ...	fruit, ...	..	B. D. 546.
Caryodaphne densiflora, ...	Kiteja, *Jav.*	Java, ...	leaves, ...	..	B. D. 547.
Mespilodaphne pretiosa, ...	....	Para, ...	rind of the calyx,	..	B. D. 547.
Nectandra cymbarum, Oronoko sassafras and other species, ...	....	South America, ...	sassafras nuts bark, leaves, ..	..	B. D. 547.
Oreodaphne opifera, Tetranthera Roxburghii, or apetala, ...	the wood, mueda lukree, ...	Mountains of India, ...	wood, ...	..	B. D. 548, A. ii. 227, Rl. 324, Rx. iii. 819.
EUPHORBIACEÆ.					
Croton Cascarilla (cascarilla,)	... .	S. America, W. Indies,	bark, ...	..	B. D. 552.
—— balsamiferum, ...	....	Jamaica, ...	plant and its balsam, ...	..	B. D. 555.
Excœcaria Agalloca, aloes wood, ..	Ugooro, H.	Sunderbunds, ...	wood, ...	..	B. D. 563, Rl. 328, 171, Rx. iii. 756, A. ii. 438.
ARISTOLOCHIÆ.					
Aristolochia Serpentaria, ...	....	North America, ...	roots, ...	..	B. D. 567.
—— longa, ...	Zurawund tuweel, P.	{ South of Europe, ...	roots, ...	..	B. D. 569, A. ii. 299, Rl. 330.
—— rotunda, ...	Zurawund mooderuj, P.				
CLORANTHEÆ.					
Chloranthus officinalis, ...	....	Java, ...	roots, ...	..	B. D. 571.
PIPERACEÆ.					
Piper nigrum, black pepper, ...	Gol mirich, H.	Malabar, &c.	berries, roots, ...	..	[Rx. ii. 150. B. D. 571, A. i. 302, Rl. 332,
—— *Cubeba*, cubebs, ...	Kubab chinee, H.	Java, ...	berries, ...	..	B. D. 573, A. i. 97, Rl. 333, Rx. ii. 159.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Piper longum, long pepper, ...	Pipel, S. Dar filfil, A. the root, pipula moola, H. ..	India, ...	roots, ...	..	B. D. 575.
—— trioicum, ...	Merial tiga, *Tel*, ...	Madras, ...	fruit, ...	..	——
—— Betle, pan, ...	Pan, H.	India, Malacca, ...	leaves, ...	..	——
—— methysticum, ...	....	Sandwich islands, ...	fruit, ...	..	——
URTICEÆ.					
Humulus Lupulus, (hop,)	....	Europe, cultivated in the Dhoon, ...	strobiles, ...	..	B D. 578.
Cannabis sativa, or Indian hemp,	Gunjah, H...	India, and Asia Minor,	plant, resin, tincture, confection, gunjah, churrus, majoon, ...	..	B. D. 579.
MYRICEÆ.					
Liquidambar styraciflua, ...	....	Mexico, N. America, ..	liquidambar, liquid, styrax, balsam, ...	..	B. D. 610.
Myrica sapida, ...	the bark, Kuephul, H.	Himalayas, ...	bark, ...	..	B. D. 611.
CONIFERÆ.					
Pinus, several species of, ...	....	Europe, Himalayas, ..	turpentine and balsams, ...	..	B. D. 612.
Juniperus Lycia, African Olibanum tree, ...	....	Europe, Africa, ...	essential oil and resin, ...	..	B. D. 619.
Juniperus communis, common juniper,	Bilpara, Pudina, Pumaroa, H	Netee Pass and Kunawur, hill districts of Himalaya, ...	leaves, berries, ..	..	B. D. 620.
Thuya articulata, sandarach, ..	....	Africa, Barbary, ...	resin or balsam,	..	B. D. 621.
MONOCOTYLEDONES.					
AROIDEÆ.					
Arum, several species, ...	Kuchoo, B.	Bengal, ...	root, ...	..	B. D. 624.

Classical and English names.	Usual Native Names.	Locality.	Part used.	Active Principle.	References.
Homalomena aromatica, ...	Kuchoo gundubee, B.				
Pothos officinalis, ...	Guj pippul, B. H.	Bengal, ...	root, ...	..	B. D. 626.
ACORACEÆ.					
Acorus Calamus, sweet flag, ..	Buch, H.	Malabar, ...	root, ...	..	B. D. 626.
PANDANEÆ.					
Pandanus odoratissimus.	Keora, B.	Bengal, ...	distilled water of flowers, ...	..	B. D. 627.
GRAMINEÆ.					
Andropogon Schoenanthus, lemon grass,	Gunda bel, H.	Arabia, India, ...	distilled water, & essential oil, ..	..	B. D. 639.
——— *Iwarancusa*, grass oil plant, ...	Roosa, H.	Nemaur, ...	do. do.	..	B. D. 639.
——— *Calamus aromaticus*,	....	Bengal, ...	do. do.	..	———
ZINGIBERACEÆ.					
Zingiber, ginger, several species of,	Adrak, B.	Bengal, ...	roots.	..	B. D. 647.
Curcuma Zerumbet, long zedoary, and other species of, ...	Kuchoora, B. Bun Huldi, B.	Chittagong, ...	roots, ...	..	B. D. 648.
——— amada, mango ginger, ...	Amada, B.	Bengal, ...	do. do.	..	B. D. 649.
Kæmpferia Galanga, ...	Chundra moola, B.	India, ...	do. do.	..	B. D. 649.
——— rotunda, ...	Booi Champa, B..	India, ...	do. do.	..	B. D. 650.
Amomum Cardamomum, and several other species, ...	Elachi, H....	Mountains of India, ..	fruits, ...	..	B. D. 650.
Elettaria Cardamomum, and several other species, ...	Burra and chota elachi, H.	Malabar, Sylhet, ...	fruits, ...	..	B. D. 651.
Alpinia Galanga, galangal roots,	Koolinjan, H.	Sumatra, ...	roots, ...	..	B. D. 651.
Hedychium spicatum, lesser galangal, ...	Kupoor kuchree, H.	India, ...	roots, ...	..	B. D. 652.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
ORCHIDEÆ. Vanilla aromatica, vanilla plant, ..	....	South America, Calcutta gardens, ...	fruits, ...	..	B. D. 653.

ANIMAL KINGDOM.

BLISTERING FLIES, (see *Blisters.*)
MUSK, } see *Diaphoretics.*
CASTOR, }

INORGANIC STIMULANTS.

These are chiefly—
ALCOHOL
ETHERS.
AMMONIA. and ITS PREPARATIONS.
CREOSOTE.
PETROLEUM.
NAPTHA.
ANTIMONY, tartrate of,
COPPER, sulphate of,
SILVER, nitrate of,
MERCURY, nitrate of,
ZINC, chloride of,
Arsenious acid,

The MINERAL ACIDS,
POTASH, SODA, and LIME,
SULPHATE OF ALUMINA AND POTASH, } as external applications.
(Alumn.)

TONICS. B. D. p. 143.

Of these there are five principal groupes, the simple bitter, astringent, alterative, antispasmodic, and convulsive.

BITTER TONICS.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
RANUNCULACEÆ.					
Thalictrum foliolosum, ...	Pelijuree, shuprak, H. ..	Mussooree, ...	root, ...	..	B. D. 161.
Hydrastis canadensis, Canadian yellow root, ...	.. .. ..	America, ...	root, ...	..	B. D. 161.
Coptis Teeta, golden thread root,..	Mishme Teeta, *(Assamese)*	Assam, ...	root, ...	..	B. D. 162.
Aconitum heterophyllum, ...	Atees, H.	Kedarnath, ...	root, ...	..	B. D. 167.
Xanthoriza apiifolia, ...	.. .. ..	United States, ...	root, ...	..	B. D. 170.
PAPAVERACEÆ.					
Papaver somniferum, poppy, ...	Chosa, S.	India, ...	the bitter principle, *Anarcotine*,	..	B. D. 176.
FUMARIEÆ.					
Fumaria officinalis, fumitory, ...	Pitpapra, B...	Bengal, ...	dried plant, ..	..	B. D. 184.
ANONACEÆ.					
Xylopia, several species of, ...	.. .. ..	West Indies,..	the wood, ...	..	B. D. 194.
MENISPERMACEÆ.					
Cocculus palmatus, colombo, ...	Colombo ke jur, H.	Mozambique, Calcutta Garden, ...	the root, ...	..	B. D. 196.
—— *cordifolius*, (Guluncha,) and other species, ...	Guluncha, B.	India, ...	root and stems, ..	..	B. D. 198.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
BERBERACEÆ.					
Berberis Lycium, and other species,	Extract, Rusot, H. ..	India, ...	bark of root and extract (rusot,)	..	B. D. 203.
MALVACEÆ.					
Sida acuta, ...	Pata, S.	India,..	root, ...	..	B. D. 215.
MELIACEÆ.					
Melia Azedarach, Persian lilac,..	Dek, H.	India...	bark and leaves,	..	B. D. 263.
—— *sempervirens*, ...	Mahanimba, Bukain, H. ..	Bengal, ...	do.	..	B. D. 244.
Azadirachta indica, margosa tree,	Nim, H.	Bengal, ...	do.	..	
Xylocarpus Granatum, ...	Pussoor, B.	Sunderbunds, ...	almond and oil,	..	B. D. 246.
CEDRELACEÆ.					
Soymida (or *Swietenia*) *febrifuga*,	Rohun, H.	Bengal, ...	bark, ...	..	B D. 247.
Khaya senegalensis, ...	Cailcedra, ...	The Gambia, ...	bark, ...	..	B. D. 250.
RUTACEÆ.					
Galipea Cusparia, & other species,	....	South America, ..	bark, ...	..	B. D. 266.
SIMARUBEÆ.					
Quassia amara, ...	....	South America, Botanical Garden, ...	wood, ...	..	B. D. 267.
—— *Simaruba*, mountain damson, ...	....	do.	wood and bark,	..	B. D. 268.
Picræna excelsa, ...	....	do.	do	..	B. D. 269.
Nima quassioides.	....	Himalayas, ...	wood, ...	..	
AQUIFOLIACEÆ.					
Ilex aquifolium, holly, ...	....	America, ...	bark and leaves,	..	B. D. 271.
—— dipyrena, ...	....	Missouri, ...	do.	..	B. D. 272.
Prinos verticillatus, black alder, ..	....	America, ...	bark, ...	..	

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active Principle.	References.
LEGUMINOSÆ.					
Tephrosia purpurea, ...	Surpunka, B.	Coromandel, ...	root, ...	..	B. D 292.
Agati grandiflora, ...	Buka, B.	Bengal, ...	bark, ...	..	B. D. 296.
Cæsalpinia (or Guilandina,) *Bonducella*, ...	Kutkulega, B.	Bengal, ...	kernels, ...	..	B. D. 311.
ROSACEÆ.					
Malus communis, common apple, ...		Europe, Asia Minor, ..	bark of, (Phloridzite) root, ..	..	B. D. 329.
CUCURBITACEÆ.					
Trichosanthes cordata, and other species, the action of which is but little known, ...	Boomee koomara, B. ..	East of Bengal, ..	root, ...	..	B. D. 349.
UMBELLIFERÆ.					
Imperatoria Ostruthium, masterwort, ...		Europe and America, ..	root, ...	..	B. D. 365.
CORNEÆ.					
Cornus florida, and some Himalayan species, ...	.. ..	United States, ...	bark, ...	..	B. D. 374.
CINCHONACEÆ.					
Cinchona, several species of Peruvian bark trees, ...	.. ..	South America, ..	bark and the active principle,	Quinine, Cinchonine Aricine & their salts,	B. D. 383.
Portlandia hexandra, French Guiana bark, ...	.. ..	Guiana, Berbice, ..	bark, ...	..	B. D. 393.
Hymenodictyon excelsum, or Cinchona excelsa, ...	Bundaroo, B. Kala Buchnak, H.	Mountains of India, ..	bark, ...	..	B. D. 394.
Ophiorriza Mungos, ...	.. ..	Java, Ceylon, Sumatra,	whole plant, ..	..	B. D. 400

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
SYNANTHEREÆ.					
Taraxacum officinale, Dandelion,	.. ..	Europe, Himalayas, ..	fresh plant and extract, ..	..	B. D 407.
Cichorium Intybus, wild succory, an Indian species, ...	Kasni, H.	Europe, Himalayas. ..	fresh root, ..	..	B. D. 408.
Centaurea Benedicta, blessed thistle, and several other species, ..	.. ..	South of Europe, ..	leaves, ...	..	B. D. 409.
Arctium Lappa, Clit-bur or burdock, ...	.. ..	Europe, ...	root, leaves, seeds,	..	B. D. 410. B. D. 412.
Anthemis nobilis, camomile, ..	Baboone phool, ...	Europe, ...	flowers, ...	..	
Artemisia Absinthium, wormwood, and several species, ...	Afsunteen, A. Murwa, H. Nagdoona, H. ..	Europe, India, ...	plant (flowers seeds,) ..	..	B. D. 414.
STRYCHNEÆ.					
Strychnos Pseudoquina, ...	.. ..	Brazil, ...	leaves, bark, root,	..	B. D. 444.
APOCYNEÆ.					
Wrightia antidysenterica, ...	Seeds, Indurjuo shereen, Tiwaj, Lisan ul-asafir, ..	Malabar, Ceylon, ..	bark, seeds, ..	..	B, D. 446.
		United States, ...	root, ...	..	B. D. 448.
Apocynum androsæmifolium, ..	.. ..				
Holarrhena pubescens, ...	Seeds, Indujuo tulk, ..	Bengal, ...	seeds, ...	..	B. D. 449.
——— antidysenterica, ..					
GENTIANEÆ.					
Menyanthes trifoliata, trefoil, ..	.. ..	Europe, ...	stems & rhizomes,	..	B. D. 457.
Chironia Centaurium, ...	.. ..	Europe, ...	whole plant, ..	..	B. D. 457.
——— centauroides, ...	Nye, ...	Bengal, ...	leaves, ...	..	B. D. 461.
Gentiana lutea, and several other species, ...	.. ..	Europe, America, ..	root, ...	..	B. D. 459.
Agathotes Chirayta, and several allied species, ...	Chirataka, Chirata, ..	Morung Hills, Bengal,	plant, ...	..	B. D. 459.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
SOLANEÆ.					
Solanum Pseudoquina, ...	.. ..	Brazil, ...	plant, ...	....	B. D. 463.
SCROPHULARINEÆ.					
Picrorrhiza Kurrooa, ...	.. ..	Kedarkanta, Himalayas,	root, ...	....	B. D. 478.
ACANTHACEÆ.					
Rhinacanthus communis, or Justicia nasuta, ...	Kabooter ke jur, ...	India, ...	roots, ...	....	B. D. 481.
Andrographis (or *Justicia*) *paniculata*, ...	Kalupnath, muha tata, kreat, ...	Malabar, ...	whole plant, and roots, ...	....	B. D. 482.
URTICEÆ.					
Humulus Lupulus, hop, ...	.. ..	Europe, and cultivated in the Dhoon,	extract of strobiles,	....	B. D. 578.
MONOCOTYLEDONS.					
LICHENES.					
Cetraria islandica, Iceland moss, ..	.. ..	Iceland, ...	whole plant, ..	....	B. D. 672.

ALTERATIVE TONICS. B. D. p. 145.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active Principle.	References.
ZYGOPHYLLEÆ.					
Guaiacum officinale, ...	....	West Indies, ...	bark, wood, resin,	....	B. D. 258.
ARALIACEÆ.					
Aralia nudicaulis, ...	....	North America, ...	roots, ...	..	B. D. 372.
Panax quinquefolius, Ginseng, ..	....	Tartary, Canada, ...	roots, ...	....	B. D. 373, Rl. 120, 234.
SYNANTHEREÆ.					
Cacalia Kleinia, ...	Lisan ulsaur, A. Gao Zuban, P.	India, ...	leaves, ...	....	B. D. 420, A. ii. 188, Rx. iii. 413.
APOCYNEÆ.					
Cerbera Thevetia, ...	....	India, ...	bark, ...	....	B. D. 447, Rl. 270.
Ichnocarpus frutescens, ...	....	Ceylon, ...	roots, ...	....	B. D. 449, Rl. 270.
ASCLEPIADEÆ.					
Calotropis gigantea, ...	Mudar, H. Akund, S.	India, ...	bark of root, ...	....	B. D. 452, A. i. 486, 7, 488, Rx. ii. 30, Rl. 275.
——— *procera*, ...					
——— *Hamiltonii*, ...	Ununtamul, H.	India, ...	roots and stems, ...	....	B. D. 455, Rl. 272, 383, Rx. ii. 39.
Hemidesmus indicus, ...					
SOLANEÆ.					
Solanum Dulcamara, bitter sweet,	....	Europe.	tops and twigs, ..	....	B. D. 462.
VERBENACEÆ.					
Vitex trifolia, ...	Nisindha, H.... ..	Bengal, ...	powdered fruit,	....	B. D. 484, Rl. 121, A. ii. 252, Rx. iii. 70.
——— *Negundo*, ...	Nergundi, B.... ..	Bengal, ...	decoction of root,		
Volkameria inermis, ...	Sangkopee, H....		juice of leaves and root, ...	....	B. D. 486, Rl. 299, A. ii. 369, Rx. iii. 58.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active Principle.	References.
THYMELEÆ.					
Daphne Mezereon, ...	Mezereon, ...	Europe, ...	bark and root, ..	..	B. D. 530.
EUPHORBIACEÆ.					
Croton Cascarilla, ...	....	West Indies, ...	bark, ...	..	B. D. 552.
Euporbia Tirucalli, milk hedge ...	Lunka sij, B....	Bengal, ...	milk, ...	..	B. D. 563, A. ii. 133, 425, Rx. ii. 470.
Pedilanthus tithymaloides, Jew bush, ...	....	West Indies, ...	milk, ...	..	B. D. 566.
ARISTOLOCHIÆ.					
Aristolochia Serpentaria, and several species, ...	See above, ...	North America, ...	roots, ...	..	B. D. 567.
MONOCOTYLEDONES.					
SMILACEÆ.					
Smilax Sarsaparilla, ...	}	Brazil, China, Bengal,	roots, ...	..	} B. D. 643, A. i. 70, 592,
—— *China*, and other species ..	}				} Rl. 381, Rx. iii. 792.
CRYPTOGAMIA.					
LICHENES.					
Cetraria islandica, Iceland moss,	....	Iceland, ...	plant, ...	..	B. D. 676.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
CORIARACEÆ.					
Coriaria Nipalensis, ...	Mussooree, H....	Himalayas, ...	bark, ...	....	B. D. 270, Rl. 165.
——— myrtifolia, ...	....	Europe and Egypt, ...	leaves, ...	....	B. D. 270.
LORANTHACEÆ.					
Viscum monoicum, parasite of the Nux-vomica of Sylhet, ...	Kuchila ke mulung, ...	Cuttack and Orissa, ...	leaves, ...	....	B. D. 375.
SYNANTHEREÆ.					
Arnica montana, wolf's bane, ...	....	Europe, ...	flowers, ...	....	B. D. 421.
RHODODENDRIEÆ.					
Rhododendron, several species of,	Leaves. Burg-i-tibbut, Hoolas Cashmeree, talesfur, ..	Himalayas, Cashmere,	leaves, bark, ...	....	B. D. 425, Rl. 259.
STRYCHNEÆ.					
Strychnos Nux-vomica, ...	Koochla, H. Khanek ul kelb, A.	Bengal, ...	{ bark, seeds, strychnine brucine, ...	....	B. D. 436, Rx. i. 575, A. i. 318, ii. 489, Rl. 271.
——— *St. Ignatii*, ...	Papeeta, H....	Philippine Islands, ...	seeds, ...	....	B. D 441.
——— *Colubrina*, and other species, ...	Naga musada, Tel.	Malabar, Ceylon, ...	the wood (lignum colubrinum,)..	....	B. D. 442, A. ii. 202, Rx. i. 577, Rl. 272.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
SAPINDACEÆ.					
Sapindus emarginatus, soap nut plant, ...	Ritah, H.	Bengal, ...	dried pulp of fruit,	..	B. D. 241, A. ii. 318, Rx. ii. 279, Rl. 137.
TEREBINTHACEÆ.					
Protium Kataf, myrrh tree, ...	Myrrh, Heera, Bol, H.	Arabia, ...	gum resin, myrrh,	..	B. D. 285,
Commiphora Madagascarensis, Googul tree, ...	Gum resin, Googul, ...	Bengal, ...	gum resin, googul, or bdellium, ..	..	B. D. 287, Rx. ii. 244, Rl. i. 176.
LEGUMINOSÆ.					
Myrospermum peruiferum, ...	....	Peru, &c.	balsam, Peruvian,	..	B. D. 290.
Myroxylon toluiferum, ...	....	South America, ...	balsam, St. Thos's.	..	B. D. 291.
UMBELLIFERÆ.					
Opoponax Chironium, ...	Gum resin Juwashur, ...	Asia Minor, ...	gum resin, ...	..	B. D. 361.
Ferula Asafœtida, ...	Gum resin, Hing, Hingra,	Herat, ...	gum resin, ...	..	B. D. 363, A. i. 20, Rl. 229.
—— *persica*, Sagapenum plant,	Kundel, H.	Persia, ...	gum resin, ...	..	B. D. 363.
Dorema Ammoniacum, ...	Oshak, P.	Persia, ...	gum resin, ammoniac, ...	..	B. D. 364.
Galbanum officinale, ...	Bireja, H.	Uncertain, ...	gum resin, galbanum,	..	B. D. 367.
VALENARIEÆ.					
Valeriana officinalis, ...	....	Europe, Asia, ...	root, ...	..	B. D. 402.
Nardostachys Jatamansi, spikenard, ...	Balchur, H. Sumbul, H. ..	Himalayas, ...	root, ...	..	B. D. 403, Rx. i. 163, Rl. 244.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
SYNANTHEREÆ.					
Artemisia, Wormwood, several species of, ...	....	....	....	..	B. D. 414.

ANIMAL KINGDOM.

Musk, produce of Moschus Moschiferus,
Castor, Castor fiber,

INORGANICS.

AMMONIA, water of,
——— carbonate,
IRON, peroxide of,
——— carbonate of,
——— permuriate of—tincture,
MERCURY, calomel and blue pill,
ARSENIC, arsenical solution.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References
MENISPERMACEÆ.					
Pareira Brava, wild vine, ...	....	Europe, ...	the root, ...	..	B. D. 200.
Cissampelos hexandra, and other species.	Neemooka, B.	Bengal, ...	the root, ...	..	B. D. 201, Rx. iii. 848, Rl. 61.
FLACOURTIACEÆ.					
Flacourtia cataphracta, ...	Talisputrie, D. Panayala, H.	Behar, ...	leaves, shoots, bark	..	B. D. 207, Rl. 73.
POLYGALEÆ.					
Krameria triandra, rhatany, ..	....	Peru, ...	root, ...	..	B. D. 211.
MALVACEÆ.					
Thespesia populnea, Portia tree,	Paris ka phul, H.	Bengal, ...	bark and yellow juice.	..	B. D. 219, Rl. 30, A. ii. 333.
STERCULIACEÆ.					
Helicteres Isora, ...	Merowri, H.	Bengal, ...	capsules, ...	..	B. D. 228, A. ii. 447, Rl. 101, Rx. iii. 143.
SAPINDACEÆ.					
Ornitrophe serrata, ...	Rakhal phul, ...	Bengal, ...	root, ...	..	B. D. 242, Rl. 137, A. ii. 413, Rx. ii. 266,
Schleichera trijuga, ...	Roatangha, *Tel*, ...	India, ...	bark, ...	..	B. D. 242, Rl. 137, A. ii. 413, Rx. ii. 277
ÆSCULACEÆ.					
Æsculus Hippocastanum, horse chesnut, ...	....	Europe, ...	bark, ...	..	B. D. 243.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
CEDRELACEÆ.					
Swietenia Mahogani, ...	....	S. America, Bot. Gard.	bark, ...	..	B. D. 247.
Soymida febrifuga, ...	Rohun, B.	Bengal, ...	bark, ...	..	B. D. 247, Rl. 142, 275, A. i. 123, 599, ii. 422, Rx. ii. 398.
Cedrela Toona, ...	Tunna, B.	Bengal, ...	bark, ...	..	B. D. 249, A. ii. 429, Rx. i. 635, Rl. i. 142.
Chickrassia tabularis, ...	Chickrassi, B.	East of Bengal, ...	bark, ...	..	B. D. 250, Rx. ii. 399, Rl. 143.
RUTACEÆ.					
Barosma crenulata, buchu, ..	....	Cape of Good Hope, ..	leaves, ...	..	B. D. 262.
XANTHOXULACÆ.					
Brucea sumatrana, ...	....	Sumatra, Bot. Garden,	bark, ...	..	B. D. 266.
CELASTRINEÆ.					
Elæodendron Roxburghii, (*Neerija Dechotoma*, Roxb.) ..	....	Mountains of India, ..	bark of root, ..	..	B. D. 271, Rx. i. 646, Rl. 167.
TEREBINTHACEÆ.					
Rhus coriaria, sumach, ..	Shumuk, P.	Persia, Syria, ...	leaves, bark, root,	..	B. D. 282, A. i. 414, Rl. 179.
LEGUMINOSÆ.					
Butea frondosa, ...	Pulasa, H.	Mountains of India, ..	astringent juice, palass kino, flowers, fruit, bark,	..	B. D. 296, Rl. 189, Rx. iii. 244, A. ii. 335.
Pterocarpus Draco, ...	The resin, Dumul-ook-wain, H.	American Islands, ...	resin, dragon's blood,	..	B. D. 297, Rl. 195.
Pterocarpus erinaceus, ..	....	Senegal, ...	African kino, ..	..	B. D. 298.
Acacia vera, arabica and other species, ...	Babool, H.	Arabia, Bengal, ...	bark, and juice,	..	B. D. 299, Rl. 182, A. ii. 142, Rx. ii. 558.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Acacia Catechu, ...	Khuer, H. product Kuth, H.	Bengal, ...	bark, and extract,	..	B. D. 301, Rl. 181, A. i. 63, Rx. 563.
Cassia alata, ...	Daod murden, H. ..	India, ...	leaves, ...	..	B. D. 308, Rl. 186, A.ii. 361, Rx. ii. 349.
—— *auriculata*, ...	Tanghedoo, Tel, ..	Coromandel, ...	whole plant, ..	..	B. D. 309, Rl. 185, A. ii. 31, Rx. ii. 349.
—— *Absus*, ...	Seeds, Chaksoo, H. Hub-ul-soudan, A, ...	Deyra Doon, ...	seeds, ...	..	B. D. 309, Rl. 184, Rx. ii. 340.
—— *Tora*, ...	Chakoonda, H... ..	Bengal, ...	seeds, ...	..	B. D. 309, Rl. 184, A. ii. 405, Rx. ii. 340.
Hæmatoxylon campechianum, log-wood, ...	.. .. ..	Campechy, Jamaica, ..	wood & extract of	..	B. D. 310.
Cæsalpinia Sappan, ...	Bukum, H.	Siam, Amboyna, ..	wood & extract of	..	B. D. 310, Rl. 185, Rx. ii. 357.
—— *Bonducella*, ...	Kutkulega, H.	Bengal, ...	bark & capsules,	..	B. D. 311, Rx. ii. 357, Rl. 275, A. ii. 135.
Bauhinia tomentosa, ...	Usmaduga, S.	Malabar, Coromandel,	dried buds and flowers, ..	..	B. D. 317, A. ii. 48, Rx. ii. 323, Rl. 183.
ROSACEÆ.					
Prunus spinosa, ...	.. .. ..	Europe, ...	juice of the fruit,	..	B. D. 324.
Potentilla Tormentilla, ...	.. .. ..	Europe, ...	root, ...	..	B. D. 325.
Agrimonia Eupatoria, and other species, ...	.. .. ..	Europe and Nepal, ..	plant and root, ..	..	B. D. 335.
Rosa canina, dog rose, ...	.. .. ..	Europe, ...	fruits, ...	..	B. D. 326.
—— *gallica*, Provence rose, ...	Gul, P., ...	Europe, India in gardens, ...	petals, ...	..	B. D. 326, Rl. 202, Rx. ii. 513.
RHIZOPHOREÆ.					
The *Mangroves*, all the species of,	.. .. ..	Bengal, ...	bark, ...	..	B. D. 330, Rx. ii. 459, Rl. 210.
TAMARISCINEÆ.					
Tamarix indica, ...	Jhawoo, H.	India, generally, ..	bark, and leaves, and galls of, ..	..	B. D. 332, Rl. 213, A. i. 438, Rx. ii. 100.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Tamarix *dioica*, ...	Jhou, buruee mue, galls, ul toorfa,	India generally, ..	bark and leaves and galls of,	..	B. D. 332, Rl. 213, A. i. 438, Rx. ii. 100.
——— *Furas*, ...	Asul or atul, galls, chotee mue and sumrut ul asul,	Dooab,			
MYRTACEÆ.					
Eucalyptus resinifera, Australian kino, ...	.. ..	Australia, Calcutta Garden,	kino of, ...	..	B. D. 336.
GRANATEÆ.					
Punica Granatum, pomegranate,	Darim, B. Anar, H. ..	Bengal, ...	roots, bark, rind of fruit, & flowers,	..	B. D. 338, A. i. 322, ii. 175, Rl. 119, 208, Rx. ii. 489.
COMBRETACEÆ.					
Terminalia Chebula, ...	Hara, H.	Bengal, Mysore, ..	fruit, ...	..	B. D. 340. Rl. 209, A. i. 237, ii. 128.
——— *alata*, ...	Urjuna, H.	....	fruit and bark, ..	..	B. D. 341, A. ii. 193.
——— *Catappa*, ...	Ingudi, S.	Cultivated in Bengal, ..	bark and leaves,	..	B. D. 341, Rl. 210, A. ii. 194, 230.
——— *Bellerica*, ...	Behira, H.	India, Mysore, ...	fruit, ...	..	B. D. 341, Rl. 209, A. i. 236.
CORNEÆ.					
Cornus florida, and other species, ..	.. ..	United States, ...	bark, ...	..	B. D. 375.
CINCHONACEÆ.					
Cinchona, several species of, ...	.. .. ..	Peruvian Andes, ...	bark, ...	..	B. D. 383.
Hymenodictyon excelsum, ...	Bundaru, H.	Mountains of India, ...	bark, ...	..	B. D. 394, Rx. ii. 148, (ed Carey) i. 529, Rl. 239, A. ii. 341.
Uncaria Gambir, ...	Gambir, *Malay*, ...	Indian Archipelago, Bot. Garden, ...	leaves and extract gambir,	..	B. D. 398, Rx. i. 517, Rl. 239, A. ii. 105.
SYNANTHERÆ.					
Centaurea, several species of, ...	.. .. ..	Europe, Asia Minor, ..	entire plant, ...	..	B. D. 490.
Eupatorium Ayapana, ...	Ayapana, B.	Bengal, ...	dried plant, ...	..	B. D. 24, R. ii. 35, Rl. 250.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
ERICACEÆ.					
Pyrola umbellata,.. ..	.. .. ..	Canada, Georgia, ..	dried leaves, ...	..	B. D. 426.
Arctostaphylos Uva ursi, Bear's whortle berry,	.. .. ..	France, Ireland, ..	powdered leaves,	..	B. D. 426.
EBENACEÆ.					
Diospyros Embryopteris, ..	Gab, H. B.	Bengal, ...	fruit, juice of, ..	..	B. D. 428, A. ii. 278, Rx. ii. 533, Rl. 262.
—— *melanoxylon*, Ebony tree,	Kendoo, B.	Bengal, Midnapore, ..	bark, ...	..	B. D. 429, Rx. ii. 530, Rl. 262.
APOCYNEÆ.					
Wrightia antidysenterica, (Connessi bark,)	Conessi, Tiway, H. ..	Malabar, Ceylon, ..	bark, ...	..	B. D. 446, A. i. 88, Rl. 270.
CORDIACEÆ.					
Cordia latifolia.	Bukooari, B.	Hindoostan, ..	bark and seeds,	..	B. D. 499, A. ii. 466.
—— *Myxa*, ...	Burra lesoora, H.				
——*angustifolia*, ...	Goondnee, H. ..	.. .. ..	bark, ...	..	B. D. 499, Rl. 306, Rx. i. 590, 595.
POLYGONEÆ.					
The *Rhubarbs*, (Rheum) contain the astringent acid in small rpoportions,					
Polygonum Bistorta, ..	.. .. ..	Europe, ...	root, ...	..	B. D. 522.
AMARANTACEÆ.					
Achyranthes aspera, ...	Lal chirchira, H. Apamarga, S.	Behar, ...	root, ...	..	B. D. 529, A. ii. 221, Rx. i. 672, Rl. 321.
EUPHORBIACEÆ.					
Emblica officinalis, or Phyllanthus Emblica,	Amlaki, S. Anola, H.	India commonly, ..	bark, fruit, ..	..	B. D, 551, A. i. 241, 244, Rl. 122.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active Principle.	References.
Phyllanthus Niruri, ...	Sadeehazar munee, H. ..	India commonly, ..	root, ...	..	B. D. 551, Rx. iii. 671, 659.
Briedelia spinosa, ...	Kadishen, *Tel.*	Ditto, ...	bark of capsule,	..	B. D. 552, Rx. iii. 735.
Alcornea latifolia, ...	.. .. ..	Jamaica, ...	bark, ...	..	B. D. 561.
Caturus spiciflorus, ...	.. .. ..	Bengal, ...	flowers, ..	..	B. D. 569. Rx. iii. 760, Rl. 326.
BALANOPOREÆ.					
Cytinus Hypocistus, ...	.. .. ..	Europe, ...	juice, ...	..	B. D. 569.
Balanophora gigantica, ...	Neerbees, B. ..	Burmah, ...	bark, ...	..	B. D. 569, Rl. 330.
JUGLANDEÆ.					
Juglans regia, Walnut, ...	Akrot, H.	Himalayas, ...	bark, pericarp, ..	..	B. D. 605.
AMENTACEÆ.					
Quercus Robur, Oak tree, ...	.. .. ..	Europe, ...	bark, ...	..	B. D. 607.
——— *infectoria*, Gallnut oak,	The galls, Majoophul, H...	Asia Minor, Kurdistan,	galls, ..	..	B. D. 607.
PALMÆ.					
Areca Catechu, ...	Soopari, B.	Eastern Islands, Bengal, ...	betel nut, ..	..	B. D. 643, A. ii. 268, Rl. 400, Rx. iii. 615.
Calamus Draco, ...	The resin Damulukwain, H.	Indian Archipelago, ..	resin, dragon's blood,	..	B. D. 643.

INORGANIC ASTRINGENTS.

ALUM, Sulphate of Alumina and Potassa.
ACETATE of LEAD.
SULPHATE of COPPER.
SULPHATE, MURIATE, SESQUI-NITRATE, } of IRON.
BI-CHLORIDE of MERCURY.
NITRATE of SILVER.
SULPHATE of ZINC.

REFRIGERANTS, B. D. 147.

The articles used as internal refrigerants have either been described already under the heads of Diaphoretics, Diuretics, &c. or are included in the next division, Narcotics.

NARCOTICS. B. D. 150.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
RANUNCULACEÆ.					
Aconitum ferox, and other species, monk's hood.	The root, Bish, Meetha teelia, H.	Himalayas, ...	the root, ...	Aconitine,	B. D. 165, Rl. 46, 272.
PAVAVERACEÆ.					
Papaver somniferum, poppy, ..	The juice, Afyoon, Afeem, H.	Bengal, ...	capsules, concrete juice, opium,	Morphia,	B. D. 171, A. i. 326, ii. 329. Rl. 119, Rx. ii. 571.
Meconopsis aculeata, ...	....	Himalayas, ...	root, ...	..	B. D. 184, Rl. 67,
MENISPERMACEÆ.					
Anamirta Cocculus, or cocculus indicus.	Kakmari, S.	Malabar, Bot. Garden,	seeds, ...	Picrotoxic acid,	B. D. 195, Rl. 61. A. ii. 131.
FLACOURTIACEÆ.					
Hydnocarpus venenata, ...	....	Ceylon, ...	fruits a fish poison,	..	B. D. 207.
DIPTEROCARPEÆ.					
Dryabalanops Camphora, Camphor,	Kufoor, H.	Sumatra, Java, ..	camphor, ..	..	B. D. 220.
MELIACEÆ.					
Walsura Piscidia, ...	Wallursi, T.	the Circars, ...	bark, a fish poison	..	B. D. 247, Rx. ii. 317, Rl. 143.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active Principle.	References.
TEREBINTHACEÆ.					
Rhus Toxicodendron, poison oak,	....	Europe, ...	leaves, ...	..	B. D. 282.
—— Kakrasinghee, ...	Kakrasinghee, H.	Dhoon, ...	leaves, seeds, ..	..	B. D. 282. Rl. 175.
LEGUMINOSÆ.					
Piscidium Erythrina, Jamaica dogwood, ...	....	West Indies, ...	bark, root, a fish poison, ...	..	B. D. 316.
ROSACEÆ.					
Amygdalus communis, (bitter variety) almond, ...	Kurwa Badam, H.	Asia Minor, Europe, ..	fruit, kernel, ..	Hydrocyanic acid,	B. D. 322, Rl. 202.
Armeniaca vulgaris, apricot, ..	Burkook, H.	Himalayas, ...	oil of kernels ..	do.	B. D. 323, Rl. 17.
Cerasus caproniana, cherry tree,	Alloo baloo, H.	Himalayas, Europe,	leaves, kernels,..		B. D. 323.
——*Padus*, bird cherry, ..	....	Europe, ...			
——*Lauro cerasus*, cherry laurel	....	Affghanistan, Europe			
UMBELLIFERÆ.					
Cicuta maculata, snake weed, ..	....	United States, ..	roots, seeds, ..	..	B. D. 356.
—— virosa, water cowbane, ..	....	Europe, Siberia, ..			
Œnanthe crocata, hemlock, dropwort, and other species, ..	....	Europe, ...	root, ...	..	B. D. 359.
Conium maculatum, common or spotted hemlock, ...	....	Europe, ...	juice, extract leaves, seeds,	Conein, ..	B. D. 369.
LORANTHACEÆ.					
Viscum monoicum a parasite of the nux-vomica tree, ...	Kuchila ke mulung, B.	Cuttack, Orissa, ...	leaves, &c. ..	Strychnine Brucine,..	B. D. 375.
SYNANTHEREÆ.					
Lactuca sativa, lettuce, ...	Kahoo, H.	Cultivated in Bengal,..	concrete juice, lactucarium, or lettuce opium,	..	B. D. 406, Rl. 247.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	Reference.
Arnica montana, wolf's bane, ..	....	Europe, ...	flowers and active principle, ..	*Cytisine*,	B. D. 421.
LOBELIACEÆ.					
Lobelia inflata, Indian tobacco, and several other species, ..	....	United States, ..	leaves & capsules,	..	B. D. 423.
RHODODENDRA.					
Kalmia latifolia, ...	....	Virginia, Carolina, ..	flowers, ...	..	B. D. 425.
Rhododendron ferrugineum, ..	....	Europe, ...			
——— arboreum, ...	....	Himalayas, ...			
——— campanulatum, ..	Burg i tibbet, Hoolas Cashmeree, H.	Thibet, Cashmere, ..	leaves, ...	..	B. D. 425, Rl. 258.
——— aromaticum, ..	Talesfur, H.	Cabul, ...			
Azalea pontica, ...	....	Colchis, ...	honey of its flower,	..	B. D. 425.
Ledum latifolium, Labrador tea,	....	Labrador, ...	leaves, ...	..	B. D. 425.
STRYCHNEÆ.					
Strychnos Nux-vomica, Nux-vomica, ...	Kuchila, H.	Bengal, ...	nut, bark, leaves,	..	B. D. 441, Rl. 270. Rl. i. 575, A. ii. 202, 489.
——— *Sancti Ignatii*, St. Ignatius Bean, ...	Papeeta, H.	Philippine Islands, ..	nut, ...	all containing strychnine and brucine,	
——— *colubrina*, snake wood	Naga musada, Tel.	Malabar, Ceylon, ..	wood, ...	..	
——— *Tieute*, and other species,	....	Java, ...	extract of bark,	..	
APOCYNEÆ.					
Nerium Oleander, ...	Karzahra, H.	Bengal, ...	leaves, wood, root,	..	B. D. 445, Rl. 269, A. ii. 7, A. ii. 23.
——— odorum, ...	Kurrubee, H... ..				
——— piscidium, ...	....				
Cerbera Tanghin, ...	....	Madagascar, ...	kernel of nut, ..	..	B. D. 446.

Classical and English Names.	Usual Native Names,	Locality.	Part used.	Active principle.	References.
SOLANEÆ.					
Solanum nigrum, ...	Arrub-ul salib, H.	Europe, Bengal, ..	fruits, extract, ..	..	B. D. 462, Rl. 279.
Atropa Belladonna, deadly nightshade, ...	....	Europe, ...	leaves, ...	Atropia, ..	B. D. 463, A. i. 207.
——— *Mandragora*, mandrake,	Yeb rooj, H, ...	Persia, Europe, ..	root, ...	..	B. D. 464.
Physalis somnifera, vel, flexuosa,	Usgund, kaknuj, H.	India, ...	leaves, stems, ..	..	B. D. 467, Rx. i. 561, A. ii. 14, Rl. 279.
Datura Stramonium, thorn-apple, ...	Datoora, } seeds, jowz	Europe, ...	stems, capsules, seeds, ...	} Daturia,	B. D. 469, A. i. 442, Rl. 279, Rx. i. 561.
——— *fastuosa*, ...	Kala datoora, } methal, H.	India, ...	....	}	
——— *alba*, ...	Sada datoora, } A.	....	....	}	
Hyoscyamus niger, henbane, ..	Seeds, (*khorasanee ajwain*, H.)	Europe, cultivated in India, B. garden, ..	leaves, seeds, extract, ...	Hyoscyamia, ..	B. D. 470, A. i. 167, Rl. 279.
Nicotiana Tabacum, tobacco, & other species, ...	Tambaca, H.	West Indies, Asia Minor Bengal, &c.	leaves and preparations,	Nicotina,	B. D. 471. A. i. 447, Rl. 483.
Cestrum venenatum, ...	....	Cape of Good Hope, ..	bark, ...	..	B. D. 474
SCROPHULARINEÆ.					
Digitalis purpurea, foxglove and other species, ...	....	Europe, ...	leaves, ...	..	B. D. 474.
LAURINEÆ.					
Laurus Camphora, or camphora Officinarum, camphor tree, ..	....	Japan, ...	the camphor, ..	..	B. D. 545, Rl. 324, A. i. 588, Rx. ii. 304.
EUPHORBIACEÆ.					
Fluggea virosa, or Phyllanthus virosus, ...	....	Circar Mountain, ...	bark, a fish poison,	..	B. D. 553, Rl. 327
Sapium indicum, ...	Hoorora, B.	Delta of Ganges, ...	juice, seeds, fish poison,	..	B. D. 533, Rx. iii. 692, Rl. 328.
URTICEÆ.					
Humulus Lupulus, hop, ..	....	Europe, the Dhoon, ..	strobiles, lupuline,	..	B. D. 578.

Classical and English Names.	Usual Native Names.	Locality.	Part used.	Active principle.	References.
Antiaris toxicaria, upas, ...	....	Java, ...	juice, ...	..	B. D. 579.
Cannabis sativa or *indica*, hemp.	Gunjah, Sidhee, H.	Bengal, ...	leaves, resin, &c.	..	B. D. 579, Rx. iii. 772, Rl. 333, A. ii. 108.
GRAMINEÆ.					
Lolium temulentum, intoxicating darnel, ...	....	Europe, ...	seeds, ...	..	B. D. 637.
MELANTHACEÆ.					
Veratrum album, white Hellebore, ...	....	Europe, the Caucasus,	root, ...	*veratria*,	B. D. 657.
——— *Sabadilla*, ...	....	S. America, W. Indies,	the seeds, sabadilla, ...	..	B. D. 658.
Helonias officinale, ...	....	Mexican Andes, ...	the seeds, ...	..	B. D. 658.
Colchicum autumnale, the *Hermodactyl* root, ...	Surinjan shereen, surinjan tulk, H.	Uncertain, ...	tubers or corni,	..	B. D. 661.

INORGANIC NARCOTICS.

HYDROCYANIC ACID, ...	from various Rosaceæ, and the ferrocyanuret of Potassium.
CYANURET of POTASSIUM, ...	see Pharmacopœia.
ALCOHOL, ...	from fermented Sugar.
ETHER SULPHURIC, ...	from Alcohol by action of sulphuric acid.
CARBONIC ACID, ...	from burning charcoal, and various carbonates.

Part III.

Materia Medica.

Acetate of Ammonia, Water of. (Ammoniæ Acetatis Aqua)—Sp. Gr. 1011, neutral, neither smells of ammonia nor of vinegar; not precipitated by nitrate of silver; may be evaporated from platinum or talc without leaving any residuum; does not redden litmus, nor turn turmeric paper brown. Solution of potash sets free ammonia, sulphuric acid disengages vapours of acetic acid.

Sirka ke Tesab.—Acidum Aceticum.

Acid, Acetic.—Density not above 1068·5, volatile, colourless, not coloured by sulphuretted hydrogen or precipitated by the baryta test; 100 minims neutralize 216 grs. of carbonate of soda.

Varieties.—Vinegars

a. British.—Sp. Gr. 1006 to 1019.

b. Distilled.—Sp. Gr. 1005.

c. French.—Sp. Gr. 1014 to 1020.

d. Pyroligneous or Wood. Sp. Gr. 1034, colorless; 100 minims neutralize 53 grains of carbonate of soda.

The British and French Vinegars contain a small quantity of sulphuric acid, which is detected by nitrate of Baryta; 30 minims of a solution of this test should precipitate all the sulphuric acid in four fluid ounces of these varieties. The *Bengal* vinegar described in the next part is too impure to be admitted as an article in this list.

Loban ke Khoolasa—Acidum Benzoicum.

Acid, Benzoic.—Crystalline, fragrant, dissolved in solution of potash, feathery, brilliant, melted and volatilized if heated on a slip of talc or platinum, or in a test tube over a spirit lamp flame.

Niboo ke Khoolasa—Acidum Citricum.

Acid, Citric.—White, in irregular, roundish hard crystals; not precipitated by a solution of potash, which would detect tartaric acid by precipitating the bitartrate of potash;

heated on talc with a little nitrate of ammonia, *(see tests,)* it is entirely consumed, shewing the absence of alkaline or earthy admixtures.

ACID, HYDROCYANIC OR PRUSSIC.—Transparent, colorless, smells faintly of bitter almonds. Add a few drops of a solution of nitrate of silver, *(see tests,)* to a fluid drachm of the acid in a glass test tube, let the precipitate deposit, pour off the fluid above and introduce half a drachm of nitric acid and boil: the precipitate should disappear. This test proves the absence of muriatic acid. After this is done, take one hundred minims and agitate well in a small stoppered phial with 10 grains of pure and finely powdered red oxide of mercury. Pour off the fluid and repeat this once with distilled water. Dry the red precipitate with blotting paper, and afterwards on a hot-water plate: weigh: divide the loss of weight by 4, and the result gives the quantity by weight of real hydrocyanic acid present in the specimen: 2 per 100 is the proper strength.

ACIDUM HYDROCYANICUM.

ACID, MURIATIC OR HYDROCHLORIC.—Smell acrid. Sp. Gr. 1180; yellow; diluted with four measures of water gives traces of *sulphuric acid*, detected by nitrate of baryta; of *oxide of iron*, detected by giving a blue precipitate with a solution of ferrocyanuret of potassium, *(see tests)*; of *Chlorine*, detected by its bleaching a solution of indigo in sulphuric acid. *(see tests.)* When pure, sp. gr. 1170, colorless, not affected by the above reagents, and not precipitated by water of ammonia added in excess.

Nimuk ke tesab.—ACIDUM MURIATICUM OR HYDROCHLORICUM.

ACID, NITRIC.—Sp. Gr. 1380 to 1500: pale yellow. In the upper part of the bottle there is a brown vapour; if it contain sulphuric acid, one volume in four of water gives a precipitate with a dilute solution of nitrate of baryta. Muriatic acid is usually present, and is detected by diluting one measure of the acid with 10 of distilled water, and adding nitrate of silver so long as there is a precipitate; collect this and dry on a hot-water plate, divide by 4, and the result is very nearly the quantity of muriatic acid present by weight.

Shora ke tesab.—ACIDUM NITRICUM.

When pure the acid is colourless, not precipitated by the above tests.

ACID, PYROLIGNEOUS.—*(Acetic,)* or the acid obtained by distillation of wood, transparent, colourless, fragrant. Sp. Gr. 1034 to 1050; when nearly neutralized by ammonia, is not blackened by sulphuretted hydrogen, *(see tests,)* or hydro-sulphuret of ammonia, nor precipitated by nitrate of baryta. 100 minims neutralize 53 grains of carbonate of soda.

ACID, SULPHURIC, OR OIL OF VITRIOL.—*Gunduk ke tesab.*—ACIDUM SULPHURICUM, *(Dilute.)*—Sp. Gr. 1200 to 1250, slightly milky appearance, smells of sulphurous acid.

The *strong* acid is of sp. gr. 1845, transparent, colourless, oily-like. To detect sulphate of lead, dilute one measure with 20 of distilled water, and the sulphate of lead will remain as a white sediment. To detect *Nitric acid*, pour *upon* it in a broad glass a saturated solution of proto-sulphate of iron (green vitriol) so that the fluids shall not mix. If nitric acid be present, a red streak is seen where they touch.

ACID, TARTARIC.—ACIDUM TARTARICUM.—In colourless large crystals. Incinerate on talc with the nitrate of ammonia. If free from cream of tartar or lime, it is entirely consumed.

ACONITE, ROOT OF.—ACONITUM FEROX.—Assam variety, in small wicker baskets, roots small, black, very fibrous. Nipal variety, about the length of the thumb, tapering to a point, black and wrinkled, fracture white, in best specimens resinous and semi-transparent.

ACONITE OR MONKS-HOOD ROOT.—*Singea Bish*, or *Dakra.*

ACONITINA.—Active principle of the above.

ACORUS CALAMUS.—(Sweet Flag.) *Buch.* H. Roots of Acorus calamus.

ÆRUGO.—*See* VERDIGRIS.

ÆTHER, SULPHURIC.—*Æther Sulphuricus.*—Sp. Gr. ·735. Agitate in a long graduated tube of half an inch in diameter 100 measures with 50 measures of concentrated solution of muriate of lime, *(see Tests).* If no diminution of volume occurs, the ether is free from water and alcohol.

By this test 50 measures of the ether of the Honorable Company's Dispensary are found to contain 9 measures of water and spirit.

Transparent, colourless, fragrant, highly inflammable, burns with a bright yellow flame; floats upon water without mixing with it. Evaporates totally on exposure to the air. If it contain water, this is left on burning the ether.

AJWAIN SEEDS.—*Ajouain* or *Juvanee.*—Seeds of *Ptychotis ajwain.* Care must be taken not to confound these with the *Khorasanee ajwain,* which are the seeds of the poisonous *Hyosciamus* or *Henbane.*

Seeds very small, stalked, conical, pointed, streaked with yellow longitudinal stripes, stalks of seeds bright yellow.

Henbane seed, grey, not ribbed or streaked, shape obscurely triangular and flattened; surface rough, dotted. Other seeds, especially umbelliferous, are sold under both these names.

AJMOD.—Seeds of *Apium involucratum.*

AKURKURRA. (Pellitory.) Roots of *Anacyclus Pyrethrum.*

ALIVERIE.—Garden cress.—*Haleem.*—Seeds of *Lepidium sativum.*

ALCOHOL, ABSOLUTE.—Sp. Gr. ·794, unchanged by solution of nitrate of silver, though exposed to a bright light; should contain no essential oil, and not be rendered milky by being mixed with four times its bulk of water.

ALCOHOL, PHARMACEUTICAL.—*(Spirits of Wine.)*—Sp. Gr. ·835.

ALMONDS.—(*a*) Sweet and (*b*) bitter varieties. Kernels of *Amgdalus communis.*

a Amgdala dulcis.
b Amgdala amara.
a Meetha Badam.
b Kurwa Badam.

ALOES. *Musabhir* or *Eluwa.*—The dried juice of several species of Aloe, the best from Socotora; colour, liver-brown, in large masses mixed with the leaves; soft to the nail at 86°; semi-transparent in thin layers; dissolved in water does not blacken solution of sulphate of iron; solution in water yellow; smell faint.

2. *Deckan Aloes.*—Dark brown, in earthy, opaque masses, brittle and hard at 86°; often adulterated with catechu, and then its solution blackens the salts of iron.

3. *Kurachee.*—Intermediate in properties between Socotorine and Deckan kind.

4. *Barbadoes Aloes.*—Externally dark brown, fractured edges almost opaque, slightly brittle, of strong odour.

5. *Arabian,* (or Gulf,) *Aloes.*—In large masses, powder golden yellow, weak spirit leaves a flocculent residuum.

6. *Cape Aloes.*—Very dark with greenish shade in reflected light, thin layers nearly transparent; very brittle.

7. *Caballine Aloes.*—Almost black, smell offensive; full of impurities, very scarce.

The purity of aloes may be estimated by the degree of solubility in spirit, of the density of 950.

ALUM.—*Phitkāri.*—ALUMEN.—The sulphate of Alumina and Potash, in large crystals; soluble in water.

ALTHEA.—*Marsh Mallow.*—Roots and leaves of *Althea officinalis.*

AMARANTHUS.—*Nuteeya.*—Herb and leaves of several species.

AMMONIA, MURIATE OF. (Sal-ammoniac.) *Nowshadir.*—MURIAS AMMONIÆ.—In fine radiated crystalline masses; occurs in the bazar in a coarse form, containing much earthy matter. The crystals should be entirely volatilized by heat, and totally soluble in water; smell pungent when rubbed with quick lime in a mortar; crystallized gypsum is often sold in its stead.

AMMONIA, SESQUI-CARBONATE OF.—AMMONIÆ CARBONAS. Volatile from talc; precipitates by nitrates of silver and baryta are dissolved by pure nitric acid, shewing the absence of sulphate and muriate of ammonia.

AMMONIA, SPIRIT OF—AMMONIÆ SPIRITUS.—Sp. gr. ·845. Odour strong, does not effervesce on addition of acids.

AMMONIA, WATER OF *(diluted).*—AMMONIÆ AQUA.—Sp. Gr. ·960, does not effervesce with acids.

AMMONIA, WATER OF.—*Strongest,* sp. gr. ·880.

AMMONIACUM.—*Ooshk* or *Ooshāk.*—Gum resin of DOREMA AMMONIACUM; in light brown masses, containing white

substances like small almonds, soft to the nail at 86°; soluble spirit; inodorous.

ANARCOTINE.—Febrifuge crystalline alkaloid from opium: not reddened by dilute nitric acid, which gives it a bright yellow colour; not rendered blue by permuriate of iron. Totally dissipated by heating with nitrate of ammonia. *Its* muriate is not crystallizable, but very deliquescent. From muriate of anarcotine, ammonia precipitates a non-crystalline very white sediment.

ANGUSTURA BARK.—Bark of *Galipea Cusparia.*

ANIMAL CHARCOAL, OR IVORY BLACK.—*Carbo animalis.* —When pure, it is entirely dissipated on talc or platinum if burned with nitrate of ammonia.

ANISE.—*Sonf.*—Fruit of *Pimpinella anisum.*

ANISE, (*star.*)—See Star anise.

ANISE, *Essential oil of.*

ANISOMELES. — *Bootan Kushum.* — Malabar catmint. — Herb of *Anisomeles malabarica.*

ANOLA.—Fruits of *Emblica officinalis*—roundish, blackish grey, very wrinkled, obscurely six-sided, nut three celled, each cell with two red shining seeds.

ANTIMONY, GOLDEN SULPHURET OF.—*Antimonii sulphuretum aureum.*—Often adulterated with brick dust; boil in muriatic acid, this leaves the impurity and a little sulphur in globules—also with red oxide of iron; if this be present the muriatic solution will be precipitated blue by prussiate of potash.

ANTIMONY, OXIDE OF.—*Antimonii oxidum.*—White, fusible at a red heat, dissolved by a boiling solution of cream of tartar. Often adulterated with chalk, lime, or phosphate of lime, which are insoluble in the cream of tartar solution.

ANTIMONIAL POWDER.—*Pulvis antimonialis.*—A mixture of sesqui-oxide of antimony and phosphate of lime with a little antimoniate of lime. (*Ed. Ph.*) Warm muriatic acid.

dissolves it, and the solution gives a copious orange precipitate to sulphuretted hydrogen or hydro-sulphuret of ammonia; the solution gives a copious precipitate to oxalate of ammonia. Sulphate of Baryta is sometimes found as an adulteration; this is detected by its insolubility in all acids.

ANTIMONY, BLACK SULPHURET OF.—*Surma.*—ANTIMONII SULPHURETUM NIGRUM.—Sulphuret of lead is usually sold instead of this article. Heat a particle on charcoal by the blow pipe. If sulphuret of lead, it melts; and on cooling is surrounded by concentric red and yellow rings of ashes. If sulphuret of antimony, copious white fumes are evolved.

Sulphuret of antimony is also entirely soluble in warm muriatic acid; the solution is precipitated white by the copious addition of water.

ANTIMONY, TARTARIZED.—See *Tartar Emetic.*

ARACHIS OIL.—*China Badam ke tel.*—ARACHIDIS OLEUM. Oil from seeds of the *Arachis hypogea.*

ARISTOLOCHIA.—Root of *Aristolochia longa*, whitish, twisted pieces, the size of a finger; nearly tasteless. 2nd Var. Root of *Aristolochia rotunda.*

1. *Var.* long, Zurawund tuweel.
2. *Var.* round, Zurawund mooderuj.

ARISTOLOCHIA, INDIAN.—*Isarmel.*—Root of *Aristolochia Indica.* Root resembles sarsaparilla in appearance.

ARROW ROOT.—*Tikor.*—MARANTÆ FŒCULA.—Fecula of the tubers of several species of *Maranta, Curcuma,* &c.

ARSENIC.—WHITE ARSENIC. *Arsenicum album.*—*Suffeed Sumbhul, Sumul or Sumbool-khar.*—Often adulterated in Calcutta with chalk. Heat a particle in a glass tube by the spirit lamp flame; if pure, it is entirely sublimed.

ARTEMISIA.—See *Wormwood.*

ARUM OF ORISSA.—*Ghet Kuchoo.*—Recent tubers of ARUM ORIXENSE.

ASSAFŒTIDA.—*Hing or Hingra.*—Gum resin afforded by several species of *Ferula.* Best kind from Herat. Good assafœtida contains patches of fine purple matter dissemi-

nated through it. Is much mixed with leaves and stems. Often adulterated with sagapenum and galbanum; neither can be detected.

AYAPANA.—Dried leaves and twigs of *Eupatorium Ayapana.*

BABUL GUM.—*Babul Goond.*—Gum of *Acacia arabica.* Babula, *H.* Gursoonder, *Beng.*

BALSAM OF MECCA.—*Roghen Bulsan.*—Produce of *Protium Gileadense.*—BALSAMUM MECCÆ.—Odour like anise, liquid, yellowish, soluble in alcohol.

——— OF PERU.—*Balsamum Peruvianum.*—Fluid exudation of *Myrospermum peruiferum,* opaque, reddish, of sweet smell.

——— OF CANADA.—*Balsamum Canadense.*—Fluid exudation of *Abies balsamea,* nearly colourless and transparent, often sold for Balsam of Gilead.

——— OF TOLU.—*Balsamum Tolutanum.*—Semi-solid exudation of *Myrospermum Toluiferum,* in solid, brittle, golden yellow masses. Odour very sweet. Dissolved in an alkaline liquid taste resembles that of cloves.

BALUNGOO.—Seeds of *Dracocephalum Royleanum:* mucilaginous and slightly aromatic, black, $\frac{1}{8}$ of an inch long, pointed.

BANG.—Same as *Subjee;* which see, also *Hemp* and *Gunjah.*

BANOPSHA.—Dried plant of violet, *Viola odorata.*

BARBERRY, see *Rusot.*

BARLEY, PEARL.—The decorticated seeds of Barley—*Hordeum distichon.*

BARYTA, CARBONATE OF.—*Barytæ Carbonas.*—Totally dissolved by dilute nitric acid; solution of 98·8 grs. gives to sulphuric acid a precipitate, which when dried weighs 116·8 grains.

BARYTA, CRYSTALLIZED MURIATE OF.—*Barytæ Murias.*—Soluble in water, solution of 122·83 grs. treated with sulphuric acid, gives dry precipitate 116·8 grains.

BARYTA, NITRATE OF.—*See tests.*

BASSORAH GUM.—Gum of *Acacia sassa*, may be sometimes used as a substitute for Tragacanth.

B'DELLIUM.—(*Googul*).—Probably the product of *Commiphora Madagascarensis.* A semi-pellucid yellowish gum resin.

BEDANA.—Seeds of *Cydonia vulgaris* infused in water give a thick demulcent mucilage.

BEES' WAX, BLEACHED.—*Sufed moom.*—CERA ALBA.—Totally fusible under heat.

BEES' WAX, YELLOW.—*Peela moom.*—Secretion of the bee, *Apis mellifica*, sometimes adulterated by pease-meal. Melt and strain through cloth, the meal remains on the strainer; also with tallow, which cannot be detected, but by the smell.

BELLADONNA. *Deadly Nightshade.*—Leaves of *Atropa Belladonna.*

BEL KA PAT.—Leaves of *Cratæva religiosa.*

BENZOIN. Benjamin. — *Looban.* — Concrete balsam of *Styrax Benzoin*: fragrant, resinous, with white veins through the mass, hard at 84 ; boiled with a solution of potash, acids throw down a precipitate of benzoic acid ; it also yields this acid on the application of heat.

BERGAMOT, OIL OF.—Volatile oil of rind of the *Citrus Limetta.*

BILVA.—Fruit of *Ægle marmelos.*

BIROZEHTUR.—Oleo-resinous product of *Pinus longifolia.*

BISMUTH.—Purplish white, highly crystalline.—Sp. Gr. 9·8, brittle, powder dissolves in nitric acid, and the solution yields a white crystalline precipitate on the addition of water.

BISMUTH, WHITE OXIDE OF.—*Bismuthi oxydum album.*—Soluble without effervescence in dilute nitric acid, and the

solution not precipitated by sulphuric acid: thus distinguished from white lead.

Bleaching Soda Liquor.—Smells faintly of chlorine. Bleaches a solution of sulphate of Indigo; gives no precipitate to oxalate of ammonia; should effervesce partially on the addition of acids, and at the same time emit a strong odour of chlorine.

Blistering Flies.—See *Cantharis* and *Telini.*

Bonduc Nut.—*Kutculega.*—Seeds of *Cæsalpinia* (*or Guilandina*) *Bonducella*, irregularly round, grey; the almond is white, very hard, and intensely bitter; gets a blood-red colour from nitric acid.

Borax.—*Sohaga.*—Biboras Sodæ.—In dense crystalline masses, sometimes mixed with chalk, totally soluble in warm water; solution does not effervesce with acids, but it turns turmeric paper brown.

Botany Bay Kino.—Produce of *Eucalyptus resinifera*; opaque, dark brown; fracture shining and smooth; watery solution blackens the salts of iron strongly, and precipitates solution of gelatine.

Bucku.—Leaves of various species of *Barosma.*

Bukum Wood.—*Sapan.*—Wood of *Cæsalpinia Sapan.*

Burgundy Pitch.—*Pix Burgundica.*—Product probably of *Abies excelsa;* of light yellow colour, often adulterated with dammer or gunda barosa.

Bursunga, Leaves of.—Leaves of *Bergera Königii.*

Buch.—Root of *Acorus Calamus.* Sweet flag.

Cacalia.—*Gao Zuban, Lisan ulsaur.*—Leaves of *Cacalia Kleinia;* leaf dotted with white prickly specks.

Cajeput Oil.—*Kyapootie ka tel,* Oleum Cajeputi.—The volatile oil of the leaves of the *Melaleuca Cajeputi.*—The green colour is not caused by copper.

CALAMINE, ARTIFICIAL, PREPARED.—CALAMINA PREPARATA, impure carbonate of zinc levigated; pinkish colour, soluble in dilute sulphuric acid with effervescence; the usual impurities are lime or carbonate of baryta or clay, which are not dissolved.

CALAMUS AROMATICUS.—Sweet flag, Buch.—Rhizome of *Acorus Calamus.*

CALOMEL.—Chloride of mercury, CALOMELAS.—Entirely volatilized by heat; if it contains sulphate of baryta, this remains; if it contains corrosive sublimate, this may be detected by sulphuric ether, which dissolves it out: the etherial solution evaporated gives a crystalline crust, turned orange yellow by lime water, caustic potash, or soda.

CALUMBA ROOT.—*Colombo-ke-jur.*—COLOMBÆ RADIX.—Root of *Cocculus palmatus:* in transverse slices, bright yellow, depressed in the centre, marked with coarse radiating lines; bark greenish yellow.

CAMOMILE FLOWERS. — *Baboone-phul.* — ANTHEMIDIS FLORES.—Flowers of *Anthemis Nobilis;* heavy fragrant smell, give a very bitter infusion.

CAMPHOR.—*Kupoor.*—CAMPHORA.—Camphor of *Laurus Camphora,* or *Camphora officinarum;* entirely volatilized by heat; may be burned on the surface of water.

CANELLA.—Bark of *Canella alba;* colour pinkish-white, taste pungent.

CANTHARIS.—Blistering fly.—Cantharides; the fly *Cantharis vesicatoria,* bright green, with metallic lustre.

CAPSICUM.—*Lal merich.*—Cayenne Pepper, Chillies.—Fruit of *Capsicum annuum,* and other species.

CARBONATE OF SODA, *dried.*—CARBONAS SODÆ SICCATUM. When heated to redness, crystallized carbonate of soda loses 62 per 100.

CARBONATE OF SODA.—*Crystallized.*

CARDAMOM.—*Elachi*, var. *Bura* and *Chota*.—Fruits of various species of *Amomum* and *Elettaria*.

CARAWAY.—Fruit of *Carum Carui*.

CARAWAY, BLACK.—*Zeera seeah*.—Fruits of *Carum Nigrum*, a good substitute for Carum Carui: the seeds of the *Somraj (Conyza anthelmintica)*, are often sold for it in the bazar; about $\frac{1}{8}$ of an inch long, slightly winged, flat, ovato-lanceolate, ribbed on one surface.

CARBONATE OF MAGNESIA.—CARBONAS MAGNESIÆ.—White, light, soluble in dilute sulphuric acid. The solution takes place with effervescence.

CAROLINA PINK.—Spigelia.—Root of *Spigelia marylandica*.

CARROT *Root*.—*Gajra*.—CAROTÆ RADIX.—Root of *Daucus Carota*.

CASCARILLA.—Bark of *Croton Eleutheria?*—Grey, much covered with lichens, evolves a very fragrant odour on burning.

CASHEW NUT.—*Hidjelee Badam*.—Nut of *Anacardium occidentale;* kidney-shaped, affords a black juice used as an indelible marking ink.

CASSIA BARK.—CASSIÆ CORTEX.—Bark of *Cinnamomum*, or *Laurus Cassia*.

CASSIA, OIL OF.—CASSIÆ OLEUM.—Volatile oil of *Cassia bark*.

CASSIA PULP.—*Amultas*.—Pulp of fruits of *Cathartocarpus fistula*.

CASTOR.—CASTOR FIBER.—An animal secretion obtained from the beaver; often adulterated with dried blood.

CASTOR OIL.—*Arendi-ke-tel*.—OLEUM RICINI.—Entirely soluble in its own bulk of alcohol.

CATAPPA.—*Ingudi badam*.—Almond of *Terminalia Catappa*.

CATECHU.—*Kuth.*—Extract of wood of *Acacia Catechu, Khuer*—the kernels of *Areca Catechu:* leaves of *Uncaria Gambir,* &c. Sulphuric ether removes from 28 to 53 per 100 of tannin, according to the quality.

The best is of uniform liver-brown colour; often adulterated with red clay; this is detected by incineration. Pure catechu leaves no more than 5 per 100 of earthy matter.

CELERY SEEDS.—*Kurufs, Arab.*—APII GRAVEOLENTIS SEMINA.—Seeds of *Apium graveolens.*

CENTAURIUM.—Common Centaury.—Flowering heads of *Erythræa Centaurium.* The *Chironium Centaurium,* or *Nye* of Bengal, may be substituted for this plant.

CEVADILLA.—Seeds of *Veratrum Sabadilla* and *Helonias officinalis.*

CEYLON MOSS.—*Gigartina lichenoides.*—In white filaments, swells greatly in hot water, but is not dissolved without previous powdering and long boiling.

CHAKOON SEEDS.—Seeds of *Cordia myxa.*

CHALK, PREPARED.—Totally soluble in acetic acid; 50.68 grs. thus dissolved give to oxalate of ammonia 82·78 grs. of dry precipitate.

CHAMPAC, BARK.—CHAMPACÆ CORTEX.—Bark of *Michelia Champaca.*

CHARCOAL.—CARBO LIGNI.

CHARCOAL, ANIMAL.—CARBO ANIMALIS.—Should not effervesce on addition of muriatic acid, and the filtered liquid should give no precipitate on ammonia being added.

CHERRY LAUREL.—LAURO-CERASI FOLIA.—Leaves of *Prunus lauro-cerasus.*

CHINA ROOT.—*Chob Chinee.*—Root of *Smilax China.*

CHIRETTA.—Chirayta.—Dried plant of *Agathotes Chirayta,* an Indian substitute for Gentian.

CHLORIDE OF LIME.—CHLORIDUM CALCIS.—50 grains nearly dissolved by two ounces of water, and solution smells strongly of chlorine, especially if an acid be added; usual adulteration chalk; has powerful bleaching properties.

CHLORINE.—CHLORINII AQUA.—Solution of Chlorine.

CHIRONIA.—*Nye.*—Herb and leaves of *Chironia Centauroides.*

CHURRUS.—Hemp resin of bazar.—CANNABIS RESINA.—Commercial resin of the hemp, *Cannabis sativa.*

CHITRA.—See *Lal Chitra.*

CINCHONA CORONÆ.—*Crown bark.*—Bark of *Cinchona condaminea.*

CINCHONA CINEREA.—*Grey* or *silver bark.*—Bark of *Cinchona micrantha.*

Yellow bark, Cinchona Flava,
Pale bark, Cinchona Pallida, } Species uncertain.
Red bark, Cinchona Rubra,

100 grains of yellow bark boiled in two fluid ounces of distilled water and filtered, give with a fluid ounce of a concentrated solution of Carbonate of Soda, a precipitate which when heated in the fluid becomes a fused mass, weighing when cold two grains or more, and easily soluble in a solution of Oxalic acid.—*Edinb. Ph.*

CINNABAR.—Bisulphuret of Mercury, sold in red striated crystalline lumps, also in powder; it is often adulterated by red lead and brick dust. It is entirely volatile from a slip of talc, while these impurities remain behind.

CINNAMON.—*Darchini.*—CINNAMOMUM.—Bark of *Cinnamomum Zeylanicum* or *Laurus zeylanicum.* The volatile oil on which its virtues depend, is sometimes fraudulently extracted; this can only be detected by the taste.

CLOVE. *Long.*—Dried immature flower of *Caryophyllus aromaticus.*

CLOVES, OIL OF.—OLEUM CARYOPHYLLI.—Essential oil, of light yellow colour, liable to adulteration with fixed oils,

and with oil of turpentine. Heat a drop or two on paper over a lamp, the volatile oil is dissipated, the fixed remains.

Cocculus Indicus.—*Kakmari ke beengi.*—Fruit of *Anamirta cocculus*; an irregular berry of black colour, containing a dark coloured kernel.

Cochineal.—Coccus Cacti.—Entire insect of *Coccus cacti*, covered with a whitish powder.

Colchicum.—Meadow Saffron.—Bulbs (cormi) of *Colchicum autumnale*; sold in slices of light grey colour, and kidney-shape.

Colchicum Seeds.—*Colchici semina.*—Irregularly round, brownish red, about 1-10th of an inch diameter.

Colocynth. — *Indrayun. Bislombhee.* — Colocynthis. Pulp and Capsules.—Dried pulp of the *Cucumis colocynthis.*

Conessi Bark.—Bark of *Wrightia antidysenterica.*

Conium.—Hemlock.—Leaves and seeds of *Conium maculatum*; when triturated with water of potash, evolve a powerful odour of conia.

Copaiba.—Resinous fluid of various species of *Copaifera*; of light yellow colour; heavy odour; soluble in two parts of alcohol; slowly dissolves $\frac{1}{4}$ its weight of magnesia; liable to adulteration with fixed oil, turpentine, and *gurjun* oil.

Copaiba, volatile Oil of.

Copper, Ammoniuret of.—Cuprum ammoniatum.—A sulphate of copper and ammonia.

Copper, Sulphate of.—*Neel Tutiya.*—Cupri Sulphas. —In fine blue crystals; solution precipitated, and precipitate totally dissolved by ammonia in excess.

Cordia Myxa.—See *Sebestens.*

Coriander Seeds.—*Duniya.*—Fruit of *Coriandrum sativum.*

CORN POPPY PETALS.—PAPAVERIS RHÆADOS PETALA.

CORROSIVE SUBLIMATE OF MERCURY, BICHLORIDE OF MERCURY.—Entirely volatilized by heat, soluble in water and in sulphuric ether. The bazar *raskapur* of Bengal is a mixture of calomel with about 10 per cent. of corrosive sublimate.—See *Calomel.*

CORONILLA LEAVES.—*Krishna rajam ke patta.*—Leaves of *Coronilla picta.*

COTTON.—*Rouee, Kutn.*—GOSSYPIUM.—Hairs of the seeds of the *Gossypium herbaceum,* cotton bush.

COWAGE,—*Kiwach.*—MUCUNA.—Hair from the pods of *Mucuna pruriens.*

CREAM OF TARTAR, OR BITARTRATE OF POTASH.—BITARTRAS POTASSÆ.—Converted by a red heat into carbonate of potash; soluble in 40 parts of boiling water; 100 grains are neutralized by 75 of crystallized carbonate of soda. The precipitate it causes in a solution of acetate of lead is soluble in dilute nitric acid. Usual adulteration, Sulphate of Potash and Tartrate of Lime.

CREASOTE.—CREASOTUM.—Liquid, transparent, oily looking; colourless, smell overpoweringly empyreumatic, like that of smoked meat; slightly soluble in water; dissolves in acetic acid, volatilized at 212°, boils at 397°, distils unaltered, coagulates solution of white of egg, heavier than water, highly inflammable.

CRINUM.—See *Kanoor.*

CROTON OIL.—*Jumalgotha ke tel*—CROTONIS OLEUM.—Oil expressed from the seeds of the *Croton tiglium;* soluble in alcohol; often adulterated with castor oil, and other fixed oils; yellowish brown, heavy oily smell, very irritating to the skin.

CUBEBS.—*Kubab Chini.*—CUBEBÆ.—Fruit of *Piper cubeba.* The ground seeds should afford 10 per 100 of essential oil on distillation with water.

CUBEBS, VOLATILE OIL OF.—Light yellow colour, and fragrant.

CUMIN SEED.—*Zeera sufed.*—CUMINI SEMINA.—Fruit of *Cuminum cyminum.*

CURCUMA,—See *Turmeric.*

DAMMAR, BENGAL.—Common resin of Bengal.—RESINA BENGALENSIS.—Produce of *Shorea robusta ;* yellow, hard, brittle, translucent.

DANDELION.—TARAXACUM.—Plant of *Taraxacum dens-leonis.*

DAOUD MURDUN, *Leaves of.*—Leaves of *Cassia alata.*

DATURA.—*Datoora.*—Herb, capsules and seeds of *Datura stramonium,* and other species; seeds very small; much resemble the human ear in form.

DIGITALIS.—See *Foxglove.*

DILL SEED, *common.*—ANETHI SEMINA.—Fruits of *Anethum graveolens.*

DILL SEED, *Indian, Soya.*—Fruits of *Anethum sowa.*

DROGUE AMERE.—A compound of mastic, frankincense, myrrh, aloes, and kreat.

DULCAMARA TOPS.—Bittersweet.—DULCAMARÆ SUMMITATES.—Summits and twigs of *Solanum dulcamara ;* very little used.

EGG.—*Unda.*—OVUM.—The egg of the common fowl, *Phasianus gallus.*

ELATERIUM.—In thin grey layers; sediment from the juice of the *Momordica Elaterium,* or *Ecbalium officinale;* an alcoholic tincture deposits large crystals on spontaneous evaporation.

ELEMI.—Concrete resin.—Plant uncertain.

ERGOT OF RYE.—SECALE CORNUTUM.—A fungus, *Ergotœtia parturifaciens,* growing instead of the seed of the rye; sometimes imitated by plaster casts—the spurious ergot falls to pieces in water.

EUPHORBIUM RESIN.—Concrete resin of *Euphorbia.* Species uncertain.

FENNEL SEED.—FÆNICULI SEMINA.—Fruit of *Fœniculum officinale.* See *Sonf.* and *Panmuhori.*

FENUGREEK.—*Methee,* or *Moothee.*—FÆNUM GRÆCUM. —Seeds of *Trigonella fœnum-græcum.*

FERN.—*Filix mas.*—Root of male fern, *Nephrodium filix mas.*

FERROCYANIDE OF POTASSIUM.—POTASSII FERROCIYANIDUM.—In large lemon-yellow crystals; quite soluble in water, gives a blue precipitate with solution of permuriate of iron, brown with solution of sulphate of copper.

FIGS.—*Unjeer.*—FICI.—Fruits of *Ficus carica.*

FILFIL BURREE.—Wild pepper, fruits of *Vitex trifolia, agnus-castus* and *negundo.*

FLOUR, WHEATEN.—*Gom ke meida.*—FARINA.—Flour of seeds of *Triticum vulgare.*

FOXGLOVE LEAVES.—DIGITALIS FOLIA.—Leaves of *Digitalis purpurea.*

GAB.—DYOSPYROS.—Fruit of *Dyospyros Embryopteris;* size of a small orange; deep green, with a rusty dust; strongly astringent and mucilaginous.

GALANGA.—*Koolinjan.*—Roots of *Alpinia galanga.*

GALBANUM.—*Bireja.*—Concrete gum resin of *Galbanum officinale;* yellowish brown colour and heavy smell; soluble in a mixture of alcohol and water.

GALLS.—*Majoophul.*—GALLÆ.—Excrescence produced by the puncture of an insect called *Diplolepsis,* on the *Quercus infectoria,* or gall-nut oak.

GAMBIR.—Astringent extract of the leaves of *Uncaria Gambir.*

GAMBOGE.—GAMBOGIA.—*Mukki, Ossara Rewund.*—Product of *Hebradendron gambogioides* of Siam, also of Ceylon; sometimes adulterated with starch; boil 100 grs. in water, allow the mixture to cool and settle, add tincture of iodine; if starch be present, a greenish blue colour is struck: alkalies redden and dissolve the pure article, leaving many impurities.

GARLIC.—*Lassun.*—ALLIUM CEPA.—Bulb of *Allium cepa.*

GENTIAN ROOT.—Root of *Gentiana lutea:* very bitter.

GINGER.—*Adrak.* — ZINGIBER. — Rhizoma of *Zingiber officinale.*

GINGILIE OIL.—*Til ke tel.*—OLEUM SESAMI.—Oil of seeds of *Sesamum orientale:* light brown, Sp. gr. 911.

GOOGUL.—See *B'dellium.*

GOONCH.—ABRUS.—Roots of *Abrus precatorius.* Indian substitute for liquorice.

GRASS OIL.—*Roosa ke tel.*—Essential oil of *Andropogon Iwaranchusa;* of light straw colour, transparent and fragrant.

GUAIAC RESIN.—GUAIACI RESINA.—Resin obtained by heat from the wood of *Guaiacum officinale:* surface changes from red to green by exposure to air; tincture gives a blue colour to solutions of all starchy roots; for example—the potatoe, arrow root, &c.

GUAIACUM WOOD.—GUAIACI LIGNUM.—Wood of *Guaiacum officinale.*

GUJ-PIPPUL.—Fruit of *Pothos officinalis.*

GULANCHA.—Root and stems of *Menispermum cordifolium:* intensely bitter, transverse section very porous and radiated.

GUM ARABIC.—*Kavit goond.*—GUMMI ACACIÆ.—Gum of various species of *Acacia:* totally soluble in water, insoluble in alcohol.

GUNJAH.—See Hemp.

GURJUN OIL. — *Gurjun ke tel.*—GURJUNÆ OLEUM.—Oleo-resinous liquid afforded by several species of *Dipterocarpus:* deep brown, transparent, of nauseous odour; sometimes thick and white.

GURJUN, ESSENTIAL OIL OF.—Transparent and colourless.

GUNDABAROSA.—See Olibanum.

HELLEBORE, BLACK.—*Kali-kootkie.*—HELLEBORUS NIGER.—Roots of *Helleborus niger.*

HEMIDESMUS.—*Ununtamul.*—Roots of *Hemidesmus indicus.* Indian substitute for Sarsaparilla; occurs in bundles, about a foot and a half long; smell fragrant, enduring; fracture white; boiled in water, vapour very agreeable.

HEMP, INDIAN.—*Gunja.*—CANNABIS.—Dried plant of *Cannabis sativa v. indica.* In bundles of 2 to 3 feet long, usually containing 24 plants; the leaves and tops are adhesive to the touch, and should yield a green tincture to spirit at 835°.

HENBANE.—HYOSCIAMUS.—Leaves and seeds of *Hyosciamus niger.*

HERMODACTYL.—*Soorinjan tulkh.*—Bulb or cormus of an uncertain species of *Colchicum.*

HIBISCUS, *Capsules of.*—*Ramturai.*—HIBISCI CAPSULA.—Capsules of *Abelmoschus esculentus;* or *Hibiscus longifolius.*

HONEY.—*Shahid.*—MEL.—Saccharine product of the bee, *Apis mellifica.*

HOORMUL, *Seed.*—*Lahooree Hoormul.*—HARMALÆ SEMINA—Seeds of *Peganum Harmala;* used as rue; grey, small, pyramidal and triangular, of smell like rue.

HORN.—CORNU.—Shavings of the horn of the deer: give a jelly when boiled with water

HOP.—HUMULI STROBILA.—Catkins of *Humulus lupulus:* bitter tonic.

HORSE RADISH.—COCHLEARIÆ ARMORACIÆ RADIX.—Root of *Cochlearia armoracia.* See *Sohunjuna.*

HYSSOP.—*Zoofae.*—Dried plant of *Hyssopus officinalis.*

INDIAN FENNEL SEED.—*Panmuhori. Sonf.*—Seeds of *Fæniculum Panmorium.*

INDURJUO, *mild.*—*Indurjuo shereen.*—Seeds of *Wrightia antidysenterica:* about ¾ of an inch long, brown, nearly tasteless.

INDURJUO, *bitter.*—*Indurjuo tulkh.*—Seeds of *Holarrhena pubescens* (*Roora*) and *antidysenterica:* the same size and colour; furrowed deeply at one side, very bitter.

ICELAND MOSS.—LECHEN ISLANDICUM.—Plant of *Cetraria islandica.*

IODINE.—IODINEUM.—Totally soluble in alcohol; sublimed from talc, gives a purple vapour: "39 grains with 9 of quicklime and 3 ounces of water, when heated short of ebullition, slowly form a perfect solution, which is yellowish or brownish, if the iodine be pure, but colourless if there be above two per cent. of water or other impurity."—*Edinb. Ph.*

IODURET OF IRON.—FERRI IODURETUM.—Soluble in water, solution greenish.

IODURET OF POTASSIUM.—POTASSII IODIDUM.—With starch and dilute sulphuric acid it gives a fine blue mixture; the usual impurity is carbonate of potash. If pure, it precipitates a solution of acetate of lead, of a bright yellow colour. Common salt is detected by precipitating a solution of 100 grains by excess of nitrate of silver, agitating the precipitate in weak ammonia, and neutralizing this with nitric acid; no precipitate occurs if the salt be pure.

IPECACHUANHA ROOT.—Root of *Cephaelis Ipecachuanha,* and other species.

IRON, BLACK OXIDE OF.—FERRI OXYDUM NIGRUM.—Nearly black, attracted by the magnet, and soluble in muriatic acid.

IRON FILINGS.—FERRI LIMATURÆ.

IRON, RED OXIDE OF.—FERRI OXYDUM RUBRUM.—Soluble in muriatic acid; solution precipitated red by ammonia.

IRON RUST.—FERRUGO FERRI.—Not magnetic, soluble in muriatic acid without effervescence.

IRON, SUGARED CARBONATE OF.—FERRI CARBONAS SACCHARATUM—Colour greyish green; dissolved with effervescence by muriatic acid.

IRON, SULPHATE OF.—*Heera kasis.*—FERRI SULPHAS.—Green crystals, soluble in water; does not deposit copper on a piece of polished iron.

IRON, SULPHURET OF.—SULPHURETUM FERRI.—Soluble in dilute sulphuric acid, with evolution of sulphuretted hydrogen gas.

IRON WIRE.—FERRI FILUM.

ISARMEL.—See *Aristolochia Indica.*

ISINGLASS. — ICTHYOCOLLA. — Concrete gelatine of the sturgeon *(Acipenser sturio)* and the sulea (*Polynemus sele*) of the Ganges.

ISPAGULA.—*Ispagool.*—Seeds of *Plantago Ispagula.*

JALAP Root.—JALAPÆ RADIX.—Root of *Ipomea Jalapa* or *purga.*

JATAMANSI VALERIAN.—*Jatamansi, Balchur.*—VALERIANA JATAMANSI.—Roots of *Nardostachys Jatamansi.*

JUJUBE FRUIT.—*Ber Choonee.*—JUJUBA.—Fruit of *Zizyphus* (or Rhamnus) *Jujuba.*

JUNIPER BERRIES.—*Hoober.*—JUNIPERI BACCÆ.—Berries of *Juniperus communis.*

JUNIPER OIL.—OLEUM JUNIPERI.—Volatile oil of the fruit of the common Juniper.

JUNIPER TOPS.—JUNIPERI CACUMINA.—Tops of *Juniperus Communis.*

KALADANA, OR MIRCHAI.—Seeds of *Pharbitis cærulea,* Indian substitute for jalap.

KAMARUNGA, *fruit of.* — Fruit of *Averrhoa carambola.*

KANOOR.—Sheathing bases of the leaves of *Crinum asiaticum, v. toxicarium.*

KATHBEL.—Wood-apple.—FERONIA.—Leaves and fruit of *Feronia elephantum.*

KELON TURPENTINE.—Oily product of *Pinus* or *Cedrus Deodara.*

KINO.—Concrete juice of *Pterocarpus erinaceus, Eucalyptus resinifera,* &c. See *Polass Kino.*

KOOLINJAN.—See Galanga.

KREAT ROOT, *and Plant.—Kalupnath* or *Muha tita.*—Root and plant of *Andrographis paniculata.*

KUCHILA MULUNG.—Parasite (*Viscum monoicum*) found on the Nux Vomica trees of Cuttack; a substitute for preparations of Strychnine.

KUEPHUL.—MYRICA.—Bark of *Myrica sapida.*

KULKUL.—Seed of *Cassia Tora.*

KURROO.—Roots of *Pneumonanthe Kurroo:* an Indian substitute for Gentian.

KURUFS.—Seed of *Apium graveolens,* or Celery.

KUTIRA GUM.—Produce of *Cochlospermum gossypium;* yellow-flowered cotton tree; under the same name, and of very similar properties, is often sold the gum of several

species of *Sterculia*, (Bulea) of *Bombax pentandrum*, Huttian ke goond, &c. &c.

LACTUCARIUM. — Lettuce opium. — Inspissated juice of *Lactuca virosa* and *sativa*.

LAL CHITRA.—Blistering Plumbago.—Root of *Plumbago rosea*.

LARD.—*Churbee*.—AXUNGIA.—Fat of the *Sus scrofa*.

LAVENDER.—LAVANDULA.—The flowering tops of *Lavandula vera* and other species.

LEAD, ACETATE OF.—Sugar of Lead.—PLUMBI ACETAS.—Soluble in distilled water. A solution of 190 grains should yield to sulphuric acid 152 grains of sulphate of lead dried at 200.

LEAD, CARBONATE OF.—White lead.—PLUMBI CARBONAS.—Entirely soluble in dilute acetic acid, 100 grains thus dissolved give to sulphuric acid 114 grains of precipitate dried at 200.

LEAD, DIACETATE OF, *Solution*. — Goulard's extract. — SOLUTIO DIACETATIS PLUMBI.—Blackened by sulphuretted hydrogen, alkaline to test paper, precipitated white on exposure to the air, or being breathed through with a tube.

LEAD, IODURET OF.—PLUMBI IODIDUM.—Entirely soluble in boiling water acidulated with pure acetic acid; on cooling golden yellow crystals are deposited.

LEAD, NITRATE OF.—PLUMBI NITRAS.

LEAD, RED OXIDE OF—PLUMBI OXYDUM RUBRUM.—Soluble in fuming nitrous acid.

LEECH.—*Jonk*.—HIRUDO MEDICINALIS.

LEMON PEEL.—LIMONUM CORTEX.—Rind of fruit of *Cirus medica*.

LEMONS.—*Neboo*.—LIMONES.—Fruit of *Citrus medica* and *Citrus limonum*.

LEMON GRASS.—*Gunda Bel.*—Plant of *Andropogon schoenanthus.*

LETTUCE. — *Kahoo.* — *Lactuca sativa.* See *Lactucarium.*

LIME.—*Chuna.*—CALX.—Solution in water is not precipitated by ammonia.

LINSEED OR FLAXSEED.—*Tisi.*—LINI SEMINA.—Seeds of *Linum usitatissimum.*

LINSEED MEAL.—LINI FARINA.—Ground seeds, previously deprived of their oil by expression.

LINSEED OIL—OLEUM LINI.—Expressed oil of seeds of the *Linum usitatissimum.*

LIQUORICE EXTRACT. — GLYCYRHIZÆ EXTRACTUM. — Black and shining.

LIQUORICE ROOT.—*Jetimadh.*—GLYCYRRHIZÆ RADIX.—Root of *Glycyrrhiza glabra.*

LITHARGE.—LYTHARGYRUM.—Partially fused protoxide of lead: soluble in dilute nitric or acetic acid; sulphuric acid gives a white precipitate. The solution of 112 grains should yield 152 grains of dry sulphate of lead.

LITMUS.—LACMUS.—The colouring matter of *Rocella tinctoria.*

LOBELIA.—Herb of *Lobelia inflata.*

LOG WOOD.—HÆMATOXYLI LIGNUM.—Wood of *Hæmatoxylon campechianum.*

MADDER.—*Munjeet.*—Roots of *Rubia manjista.*

MACE.—*Jawatri.*—MYRISTICÆ ARILLUS.—Arillus of nutmeg fruit. *Myristica moschata.*

MAGNESIA.—Entirely soluble without effervescence in dilute sulphuric acid; the diluted solution is not precipitated by oxalate of ammonia.

MAGNESIA, CARBONATE OF. — MAGNESIÆ CARBONAS. — Totally soluble in dilute muriatic acid—dilute solution not precipitated by oxalate of ammonia.

MAGNESIA, SULPHATE OF.—Epsom salts.—MAGNESIÆ SULPHAS.—100 grains dissolved in water, precipitated by carbonate of soda, give 34 of dry precipitate, insoluble in ammonia ; the precipitate heated to redness on charcoal, on cooling remains perfectly white : these tests distinguish it from sulphate of zinc with which it has been largely adulterated in Bengal : if sulphate of zinc be present, the precipitate on being heated glows with the colour of the fire-fly, and while cooling, is a deep gamboge yellow.

To distinguish it from oxalic acid, add lime water to a dilute solution ; if oxalic acid be present, there is a white precipitate.

MAJOOPHUL.—See *Galls.*

MARJORAM.—ORIGANUM.—Herb of *Origanum vulgare.*

MALLOW. — *Khitmee.* — *Khungee.* — MALVA. — Root of *Malva sylvestris* or *Mauritiana.*

MARSH MALLOW.—Leaves and root of *Althea officinalis.*

MARJORAM, VOLATILE OIL OF.— ORIGANI OLEUM.

MASTIC, *resin.*—*Roomie mastike.*—Resin of *Pistacia lentiscus.*

MALKUNGEE, OIL OF.—*Malkungee.*—Empyreumatic oil of seeds of *Celastrus nutans.*

MANGANESE, PEROXIDE OF. — MANGANESII OXYDUM — Heated to redness evolves oxygen gas ; with muriatic acid disengages chlorine and dissolves. If dried and then heated to redness, the loss is 12 per 100.

MANNA.—*Shirkist.*—Sweet exudation from several species of *Fraxinus* and *Ornus.*

MARBLE.—MARMOR.—Crystallized carbonate of lime.

MERCURY.—*Para.*—HYDRARGYRUM—Sp. Gr. 13.5. vola-

tilized by heat; if pure, agitated with sulphuric acid, the acid may be boiled away without leaving a trace.

MERCURY WITH CHALK.—HYDRARGYRUM CUM CRETA.—Heated on talc, leaves a white residue soluble with effervescence in strong acetic acid.

MERCURY, BLACK SULPHURET OF—SULPHURETUM HYDRAGYRI NIGRUM.—Totally dissipated by heat.

MERCURY, WHITE PRECIPITATE of.—HYDRARGYRI PRECIPITATUM ALBUM.—Chloride of mercury and ammonia—entirely volatilized by heat. Treated with potash evolves an ammoniacal smell.

MERCURY BICYANURET OF. — HYDRARGYRI BICYANIDUM.—In white prismatic crystals totally soluble in water; in concentrated solutions, solution of nitrate of silver gives a white precipitate, soluble in hot nitric acid; often adulterated with corrosive sublimate; in this case the precipitate is not dissolved by hot nitric acid.

MERCURY, BINIODURET OF.—HYDRARGYRI BINIODIDUM.—Volatile from talc, previously changing to a brilliant yellow colour; soluble in 40 parts of a concentrated solution of common salt at 212°, and deposited in fine crystals on cooling—often adulterated with red lead, brick dust, or peroxide of mercury. The two former are not volatile. The last is not dissolved by muriate of soda solution.

MERCURY, RED, SULPHURET OF.—HYDRARGYRI BISULPHURETUM.—Totally dissipated by heat, not dissolved by nitric or muriatic acids separately, but soluble in both when mixed. It does not colour spirits of wine: sold in crystalline masses and in red powder called *Vermilion.* The powder is often adulterated, usually with red lead.

MERCURY, RED OXIDE OF.—HYDRARGYRI OXYDUM RUBRUM, *Red precipitate.*—Perfectly volatilized by heat, and soluble in muriatic acid. Brick dust and red lead, the usual adulterations, are thus detected.

MEZEREON BARK.—*Mazrioon.*—MEZEREI CORTEX.—Root bark of *Daphne mezereon.*

MISHME TEETA.—Golden thread-root of Assam.—Roots of *Coptis teeta.*

MOOSLIE, WHITE.—*Sufed Mooslie.*—Root of *Bombax Malabaricum.*

MORUNGA SEEDS.—*Hub-ool-Ban.*—MORINGÆ SEMINA.—An excellent substitute for the horse-radish, *Cochleare armoracia.*

MORUNGA ROOT.—*Sohunjuna.* Root of *Moringa pterygosperma*—similarly used.

MORPHIA, ACETATE OF.—MORPHIÆ ACETAS.—"One hundred measures of a solution of ten grains in half a fluid ounce of water and five minims of acetic acid, heated near to 212° and decomposed by a faint excess of ammonia, yield by agitation a precipitate which in 24 hours occupies 15.5 measures of the liquid."—*Edinb. Ph.*

To detect anarcotine, boil the precipitate for 20 minutes in a solution of 2 drachms of muriate of ammonia in 2 ounces of water, filter, dry, and weigh the undissolved part, the loss denotes the amount of morphia present.

MORPHIA, MURIATE OF.—MORPHIÆ MURIAS.—White, soluble in water, does not lose more than 13 per cent. if heated to 212°. If it contains anarcotine, it deliquesces or softens in a few hours when exposed to damp air, or placed close to a capsule of water under a bell glass; gives a precipitate by ammonia, which is reddened by nitric acid, and turned blue by permuriate of iron.

MOWA OIL.—BASSIÆ OLEUM.—Oil of *Bassia latifolia.*

MUDAR BARK.—*Akund.*—Bark of root of *Calotropis gigantea.*

MUEDA LUKREE.—Wood of *Tetranthera Roxburghii.*

MUGRELA.—See *Nigella.*

MURIATE of LIME,—MURIAS CALCIS.—Runs rapidly into a liquid when exposed to the air.

MUSK.—*Misk.*—MOSCHUS.—Secretion in the preputial

follicles of the musk deer, *Moschus moschiferus*; sometimes adulterated with dried blood or catechu. If the former be present, agitation with distilled water will often give a red solution, coagulated by heat. The latter is detected by adding a solution of muriate of iron to the water in which the musk was diffused: a deep black colour is produced if catechu be present.—Globules of lead are often fraudulently introduced in the sacs.

Musk Hibiscus, *seeds of.—Hubb-ul-musk.*—Abelmoschi semina.—Seeds of *Abelmoschus moschatus.*

Mustard.—*Rae.*—Sinapis.—Flour of seeds of *Sinapis nigra* and *alba.*

Myrobolan *(Belleric.) Bahira.*—Fruit of *Terminalia Bellerica.*

Myrobolan, *(black.) Zengi Har, B.*—Unripe dried fruit of *Terminalia chebula.*

Myrobolan, *(Chebulic.) Umbed'her*, H.—*Hara*, B.—Ripe dried fruit of *Terminalia chebula.*

Myrobolan, *(emblic.) Anola.*—Fruit of *Emblica* (or *Phyllanthus*) *officinalis.*

Myrrh.—*Heera Bol.*—Myrrha.—Gummy resinous exudation from *Balsamodendron myrrha.*

Neemooka.—Root of several species of *Cissampelos.*

Neerija Bark.—Bark of *Elæodendron Roxburghii.*

Negundo.—Recent leaves of *Vitex negundo.*

Nigella.—*Mugrela.—Kala-jira.*—Seeds of *Nigella sativa*; black, irregularly angular, resembling grains of coarse gunpowder.

Nim.—*Nim*-—Leaves and bark of *Melia azadirachata.*

Nitrate of Potash.—*Shora.*—Nitras potass.—Saltpetre.—The usual impurities, commercially called "*refraction*," are water, sulphates, and muriates of soda or potash.

The *quantity of water* is estimated by drying 100 grains on the water bath.

To detect the *sulphates*, add nitrate of baryta to a solution of 100 grains, filter on paper, dry the filter at 200, separate the precipitate and weigh, 11.6 grains indicate 7.1 grains of sulphate of soda, the sulphate commonly found in Bengal.

To detect the *muriate* of soda, add nitrate of silver in excess to a solution of 100 grains of the salt, collect the precipitate, dry and weigh; 144 grains correspond to 59 grains of muriate of soda.

NUTMEG.—*Juephul.*—Fruit of *Myristica Moschata.*

NUTMEG, EXPRESSED OIL OF, OR BUTTER OF.—MYRISTICÆ ADEPS.

NUTMEG, OIL OF, VOLATILE.—MYRISTICÆ OLEUM.

NUX VOMICA BARK.—*Kuchila ke chilka.*—NUCIS VOMICÆ CORTEX.—Bark of *Strychnos Nux Vomica;* grey, covered with rusty exuberance: rusty patches changed green by nitric acid; black inner bark reddened by the same reagent.

NUX VOMICA SEEDS.—*Kuchila ke beenji.*—NUCIS VOMICÆ SEMINA.—Seeds of *Strychnos Nux Vomica.*

OAK BARK.—QUERCUS CORTEX.—Bark of *Quercus pedunculata.*

OATS.—AVENA.—Seeds of *Avena sativa.*

OLIBANUM, *African.*—Probable product of *Juniperus Lycia.*

OLIBANUM, *Indian,*—OLIBANUM INDICUM.—*Gunda baroza*—oleo-resinous product of *Boswellia thurifera.*

OLIVE OIL, OR SWEET OIL.—OLEUM OLIVÆ.—Oil of fruits of *Olea Europea.*—With one 12th of its weight of nitrate of mercury solidifies in a few hours.—*Edinb. Ph.*

OPIUM.—*Afim.*—Concrete juice from capsules of the poppy.—*Papaver Somniferum. To estimate amount of Anarcotine,* triturate 200 grs. with 2 ounces of alcohol at 835°—strain through cloth—add 50 drops of strongest solution of ammonia,

and boil away ¾ths of the spirit from a water bath—on cooling, crystals of impure anarcotine are obtained, which when pressed between blotting paper, and dried at 200 should weigh at least 4 grains.

To estimate amount of Morphia.—Triturate 200 grains of Opium with one ounce of distilled water and 20 grains of dry muriate of lime, filter through cloth, and evaporate on a water bath to 1-6th.—On cooling muriate of morphia crystallizes, squeeze through cloth, and dry at 200—the product should weigh at least 4 grains

Common Adulterations of Opium.

a, Water.—Heat 100 grs. on a water bath for half an hour, the loss is water.

b, Starch, pease-meal, flour—boil 20 grs. with water—strain, allow to cool, add tincture of iodine which gives a blue precipitate with these impurities.

c, Resins, dammar and clay,—subside as a harsh mass during the trituration of 100 grains in distilled water.

d, Catechu, Gab.—To solution *a* add a solution of isinglass, there is a copious precipitate.

e, Mucilaginous extracts of bel (fruit of Aegle marmelos) and mekanna, seeds of *Euryale ferox*—add alcohol to solution *a* previously concentrated to ¼th. A copious precipitate of gummy matter ensues, quite soluble in hot water.

f, The presence of *datura, tobacco* and *bang* can only be detected by the smell of the drug, which resembles that of a bad hookah.

ORANGE FLOWER WATER.—AQUA AURANTII.—Distilled water of flowers of the *Citrus Vulgaris*—sometimes contains lead, which is detected by its being blackened by sulphuretted hydrogen.

ORANGE RIND.—AURANTII CORTEX.—Rind of fruit of common orange.

ORANGE FLOWER OIL.—AURANTII OLEUM.

ORRIS ROOT.—*Beg Banopsha.*—Roots of *Iris florentina.*

OPOPONAX. — *Juwashur.* — Gum resin of *Ferula opoponax.*

PALAS GUM.—*Palas goond* or *Dhak ke goond.*—Produce of *Butea frondosa,* in ruby red, transparent grains or irregular tears.

PANMUHORI.—Seeds of *Fæniculum Panmorium.* See *Sonf.*

PAPEETA.—Nut of *Strychnos Sancti Ignatii.*

PAREIRA BRAVA.—Root of *Cissampelos Pareira.*

PATA.—Leaf of *Corchorus olitorius.*

PATA *root,*—*Pata ke jur*—SIDÆ ACUTÆ RADIX.—Root of *Sida acuta.*

PEDALIUM.—*Gokeroo.*—Leaves of *Pedalium Murex*

PELIJUREE.—THALICTRUM.—Root of *Thalictrum foliolosum.*

PELLITORY.—*Akurkura.*—PYRETHRUM.—Root of *Anacylus* (or *Anthemis*) *Pyrethrum.*

PENNYROYAL.—PULEGIUM.—Herb of *Mentha Pulegium.*

PEPPER *Black.*—PIPER NIGRUM.—*Kala-merich.*—Unripe berries of *Piper nigrum.*

PEPPER — *Long.* — *Merich.* — PIPER LONGUM. — Dried spikes of *Piper longum.*

PEPPERMINT. — MENTHA PIPERITA. — Herb of *Mentha piperita.*

PEPPERMINT OIL.—OLEUM MENTHÆ PIPERITÆ.—Volatile oil of *Mentha piperita.*

PERUVIAN BALSAM.—See BALSAM.

PETROLEUM, or Rock oil.—*Mitte ke tel.*—PETROLEUM.—The best article comes from Rangoon and Cheduba.

PIMENTA BERRIES.—PIMENTÆ BACCÆ.—Unripe berries of *Eugenia Pimenta.*

PIPERINE.—Crystalline principle of black pepper.

PIPPULA MOOLA. — Root of long pepper, *Piper longum.*

PITCH—PIX.—Product of various *pines.*

—— *Burgundy.* — Concrete resinous exudation, probably from *Abies excelsa.*

POISON OAK.—*Rhus toxicodendron.*—Leaves of *Rhus toxicodendron.*

POMEGRANATE ROOT. — *Anar ke jur.*—PUNICA GRANATI RADIX.—Bark of root of the *Punica granatum.*

POPPY HEADS.—*Papaverum capsula.*—Unripe capsules of *Papaver somniferum.*—Those marked with parallel cuts should be rejected.

POTASH.—POTASSA.—Should dissolve in water except a few flakes of oxide of iron.

POTASH.—ACETATE OF—POTASSÆ ACETAS.

POTASH, BICARBONATE OF.—POTASSÆ BICARBONAS.—100 grs. heated to redness lose 30.7; solution does not precipitate a solution of Muriate of Lime while cold—by boiling for a few minutes the liquor deposits a white precipitate, Carbonate of Lime.

POTASH, BISULPHATE OF.—POTASSÆ BISULPHAS.—Solution strongly acid.

POTASH, BROMIDE OF.—POTASSÆ BROMIDUM.—Does not lose weight by exposure to a red heat; not precipitated by Muriate of Baryta—A solution of starch and sulphuric acid cause no blue colour.

POTASH, CARBONATE OF.—POTASSÆ CARBONAS (*Commercial.*)—At a red heat may lose 20 per cent. It should give a very faint haze with Nitrate of Baryta.

POTASH, CARBONATE OF.—(*pure*).—Does not loose weight at a low red heat.—*Edinb. Ph.*

POTASH WITH LIME.—POTASSA CUM CALCE.

POTASH, FERROCYANIDE OF.—Commonly called *Prussiate of Potash.*—FERROCYANIDUM POTASSII.—In large yellow crystals.

POTASH, HYDRIODATE OF.—See IODINE,

POTASSA, SOLUTION OF.—LIQUOR POTASSÆ.—Sp. gr. 1072. Does not effervesce with acids.

POTASH, SULPHATE OF.—POTASSÆ SULPHAS.

POTASH, SULPHATE OF WITH SULPHUR.—POTASSÆ SULPHAS CUM SULPHURE.

POTASH, SULPHURET OF.—POTASSÆ SULPHURETUM—A mixture of persulphuret of potassium with sulphate of Potash.—*Edinb. Ph.*

POTASH, TARTRATE OF.—POTASSÆ TARTRAS.—Solution neutral.

POTASH, BITARTRATE OF.—*Cream of Tartar.*—BITARTRAS POTASSÆ.—Soluble in 40 parts of boiling water, solution acid and 40 grains are neutralized by 30 of crystallized carbonate of soda.

POTASH AND SODA, TARTRATE OF.—POTASSÆ ET SODÆ TARTRAS. — Very soluble in water, and the addition of muriatic acid occasions a deposit of crystals of cream of tartar.

PRABUNATHA.—Seeds of *Cassia Tora.*

PRUNES. — PRUNA. — Dried fruit of *Prunus domestica.*

PRUSSIAN BLUE.—PERCYANIDUM FERRI.—Usually mixed with alumina. Wash with dilute muriatic acid, filter and add carbonate of soda. A white precipitate forms if alumina be present.

PYROLA.—Herb of *Chimaphila umbellata.*

QUASSIA WOOD.—LIGNUM QUASSIÆ.—Wood chiefly of *Picræna excelsa.*

QUINCE SEED.—*Bedana.*—CYDONIÆ SEMINA.—Seed of CYDONIA VULGARIS.

QUININE, SULPHATE OF.—QUINAÆ SULPHAS,—Soluble in water slightly acidulated with sulphuric acid ———— Totally destructible on talc when burned with nitrate of ammonia—loses 8 or 10 per 100 by heating to 200°. These tests prove the absence of spermaceti, stearine, powdered talc, benzoic acid, and sulphate of lime, the usual adulterations. To detect sugar, precipitate the quinine by ammonia, filter, and evaporate on a water bath—The sweet taste of the residue will denote the presence of sugar.

RAISINS.—*Kismish.*—UVÆ PASSÆ. — Dried fruit of grape, *Vitis vinifera.*

RED LEAD.—PLUMBI OXYDUM RUBRUM.—Red oxide of lead, a compound of protoxide and peroxide of lead.

RESINA.—*Resin, dammar.*—Product of various *pines.*

RHATANY ROOT.—RHATANIÆ RADIX.—Root of *Krameria triandra.*

RICE.—*Dhan.*—ORYZA.—Fruit of *Oryza sativa.*

RHODODENDRON. — *Talesfur.* — Leaves of *Rhododendron aromaticum.*

RHUBARB.—*Rewund.*—RHEUM.—Roots of uncertain species of *Rheum.*

ROHUN BARK.—*Rohun-ke-chilka.*—ROHUNÆ CORTEX.—Bark of *Soymida febrifuga*—is not spotted with rusty patches, and the inside is dark reddish brown—nitric acid does not stain it of a bright scarlet. These tests distinguish it from the poisonous bark of the nux vomica tree (*Kuchila;*) which is commonly sold for it in the bazars of Bengal.

ROSE.—*Hundred-leaved rose.*—*Gul.*—ROSA CENTIFOLIA.—Petals of *Rosa centifolia.*

ROSE.—*Red.*—ROSA GALLICA.—Petals of *Rosa gallica.*

ROSE.—*Utr of.*—Essential oil distilled from petals of the rose.

ROSEMARY.—ROSMARINUS.—Tops of *Rosmarinus officinalis.*

RUE.—*Ruta.*—Leaves and unripe fruit of *Ruta graveolens.*

RUE, *Indian.*—*Sudab.*—RUTA INDICA.—Herb of *Ruta angustifolia.*

RUSOT.—*Extract of Barberry.*—BERBERIDIS EXTRACTUM.—Extract of bark and wood of the Barberry, *(Berberis)* several species; deep yellow colour, totally soluble in water.

SABADILLA.—Fruit of VERATRUM SABADILLA, and several other MELANTHACEÆ.

SAFFRON.—*Zafran.*—CROCUS SATIVUS.—Stigmata of *Crocus sativus.*

SAGAPENUM.—*Sugbeenuj.*—*Kundel.*—Gum resin of *Ferula Sagapenum.*

SAGE.—*Salbia.*—Plant of several species of *Salvia.*

SAGE, Bengal.—*Murtoo.*—Leaves and herb of *Meriandra Bengalensis.*

SAGO.—*Sagoo.*—Farinaceous product of several *palms* and *Cycades.*

SALEP.—*Salep misree.*—Tubers of the *Orchis mascula* and other species.

SANDAL WOOD.—*Sufed sandal.*—SANTALUM ALBUM.—Wood of *Santalum album.*

SANDERS WOOD (red).—*Rukta chundun.*—Wood of *Pterocarpus santalinus.*

SAPAN WOOD.—*Bukum.*—Wood of *Cæsalpinia Sapan.*

SARSAPARILLA.—SARZA.—Root of several species of *Smilax.*

SASSAFRAS. — Root of *Lauras sassafras*, or *Sassafras officinale.*

SASSAFRAS OF ASSAM AND NIPAL.—Perhaps the bark of *Camphora glandulifera.*

SAVINE.—*Sabina.*—Tops of *Juniperus sabina.*

SCAMMONY.—*Sugmoonia.*—SCAMMONIA.—Gum resin of *Convolvulus scammonia.*—Adulterations, chalk, starch.—If the former, fragments effervesce on being thrown into dilute muriatic acid—the latter is detected by a decoction of the powder when cold being rendered blue by tincture of Iodine—yields 80 per 100 of resin to sulphuric ether.

SEBESTENS. — *Lesura, H. Buhooari, B.* — SEBESTENA. — Fruit, and pulp of *Cordia myxa.*

SEMEN CONTRA.—Unopened flowers and calices of *Artemisia contra.*

SEMEN CONTRA, *Indian.* — *Saheba.* — Undeveloped calices of *Artemisia judaica.*

SENNA, ALEXANDRIAN.—*Senna Alexandrina.*—Leaves of *Cassia lanceolata, acutifolia,* and *obovata*—with leaves of *Cynanchum arguel,* which should be removed.

SENNA, INDIAN.—Leaves of *Cassia elongata.*

SERPENTARIA ROOT.—Root of *Aristolochia serpentaria.*

SIDHEE OR SUBJEE.—CANNABIS FOLIA.—Larger leaves and capsules of *Cannabis sativa,* used for smoking.

SILVER—ARGENTUM.—Sp. gr. 10.4, dissolves in pure nitric acid. A solution of 108 grains should give to a solution of common salt a white precipitate, entirely soluble in ammonia, insoluble in water, and weighing when dried 143.72 grains. *Sycee* or China silver contains 12 grains of gold to each troy pound which is left as a black powder.

SILVER,—NITRATE OF, OR LUNAR CAUSTIC.—ARGENTI NITRAS.—White when pure, and well kept—29 grains dissolved in dilute nitric acid, and precipitated by a solution of 9

grains of muriate of ammonia, should leave a liquid which when the deposit settles yields a further precipitate if more muriate of ammonia be added.—*Edinb. Ph.*

SIMAROUBA ROOT.—SIMARUBÆ RADIX.—Root of *Simaruba amara.*

SNAKE ROOT—SENEGA.—Root of *Polygala Senega.*

SOAP BERRIES.—*Ritah.*—SAPINDI BACCÆ.—Berries of *Sapindus emarginatus.*

SOAP (*hard* or *Castile*).—*Saboon.*—SAPO DURUS—Made with olive oil and soda.

SOAP (*soft*).—SAPO MOLLIS.—Made with olive oil and potash.

SODA, BICARBONATE OF.—SODÆ BICARBONAS.—Does not precipitate solution of sulphate of magnesia till the solution is boiled.

SODA, CARBONATE OF (*crystallized*).—SODÆ CARBONAS.—Nitrate of baryta throws down a white precipitate, totally soluble in nitric acid.

SODA, MURIATE OF.—*Common salt.*—SODÆ MURIAS.—A solution of 58.75 grs. previously well dried, gives exactly 143.72 grs. of dry chloride of silver, on being precipitated by nitrate of silver; is not precipitated by phosphate of soda and ammonia, or oxalate of ammonia.

SODA, PHOSPHATE OF.—SODÆ PHOSPHAS.—Precipitated by nitrate of silver yellow.

SODA, SULPHATE OF.—*Kari mittee.*—SODÆ SULPHAS.

SODA WATER.—Solution of bicarbonate of soda charged with carbonic acid. In Bengal it very often contains copper; boil the suspected water, and add hydro-sulphuret of ammonia, this gives a black precipitate which if containing copper gives a blue solution with nitric acid.

SOHUNJUNA. — *Sohunjuna jur.* — MORINGÆ RADIX.—Roots of *Moringa pterygosperma.*

SONF.—*Indian fennel.*—Seeds of *Fœniculum panmorium.*

SORREL LEAVES.—*Chooka tiputtee.*—OXALIDIS FOLIA.—Herb of *Oxalis corniculata.*

SOMRAJ.—Seeds of *Conyza* (or *Serratula*) *anthelmintica*—a worm medicine often sold in the bazar instead of *Zeera seeah*, or black caraway.

SOYA.—See *Dill seed.*

SPEARMINT. — *Pudina.* — MENTHA VIRIDIS. — Herb of *Mentha viridis.*

SPERMACETI.—CETACEUM.—Fatty secretion of the spermaceti whale, *Physeter macrocephalus*—in fine crystalline masses.

SPIRITS OF NITRIC ETHER.—SPIRITUS ÆTHERIS NITRICI.—Hyponitrous ether, with 4 measures of rectified spirit.—*Edinb. Ph.* Sp. gr. 847—does not effervesce with alkaline carbonates.

SPIRIT, PROOF.—SPIRITUS TENUIOR.—Sp. gr. 920.

SPIRITS OF SULPHURIC ETHER.—SPIRITUS ÆTHERIS SULPHURICI.—Sp. gr. 809—does not redden litmus paper.

SPIRIT, RECTIFIED.—SPIRITUS RECTIFICATUS.—Sp. gr. 838° or less,—not rendered milky by addition of water.

SPONGE.—*Isfenj.*—SPONGIA OFFICINALIS.

SQUILL.—SCILLA.—Bulb of *Scilla maritima.*

STAR ANISE.—*Badian Kutai.*—Fruit of *Ilicium anisatum.*

STARCH.—AMYLUM.—Fecula of the seeds of wheat, *Triticum vulgare.*

STRAMONIUM, OR THORN APPLE.—See *Datura.*

STORAX.—Balsam of *Styrax officinalis.*

STRYCHNIA.—One of the alkaloid principles of the *Strych-*

nos nux vomica. Often adulterated with sulphate or phosphate of lime. Calcine on a slip of talc with a little nitrate of ammonia. If free from earthy adulterations it will be entirely dissipated—by nitric acid it is strongly reddened.

SUET—SEVUM.—Fat of the sheep, *Ovis aries.*

SUGAR *(Common).—Cheenee.*—SACCHARUM.—Product of *Saccharum officinarum.*

SULPHUR.—*Gunduk.*—Entirely sublimed by heat, does not redden moistened litmus paper.

SUMAC—RHUS SUMAC.—Leaves of *Rhus coriaria.*

TALESFUR.—See *Rhododendron.*

TAMARIND PULP.—*Emli.*—TAMARINDI PULPA.—Pulp of the fruits of *Tamarindus Indica.*

TAPIOCA.—Fecula of the root of *Janipha manihot.*

TAR.—PIX LIQUIDA.—From various species of *Pines.*

TARTAR EMETIC—Tartrate of Potash and Antimony.—ANTIMONIUM TARTARIZATUM.—Soluble in twenty parts of water, solution not affected by ferrocyanuret of potassium. Precipitated of fine orange color by hydrosulphuret of ammonia.

TARTARIZED IRON—FERRUM TARTARIZATUM.—A tartrate of Potash and sesquioxide of iron, soluble in cold water. Not precipitated by acids and alkalies, nor coloured blue by ferrocyanuret of potash.—*Edinb. Ph.*

TEJBUL.—Capsules and seeds of several species of *Xanthoxylon.*

TEJPATA.—Leaves of *Laurus* (*or cinnamomum*) *Malabathrum,* the *Folia Malabathri* of the ancients.

TELINI.—Indian Blistering Fly.—*Melöë* or *Mylabris Cichorii.*—The wing coverts are marked with large spots of light brown alternating with deep blue. Another blistering fly is small, steel blue—*Cantharis Violacea.*

THALICTRUM.—See *Pelijuree.*

THYME.—Herb of *Thymus Serpillum.*

TIL.—SESAMUM.—Seeds and oil of *Sesamum Orientale.*

TIN.—*Ranga.*—STANNUM.

TOBACCO.—*Tumbaca*—TABACUM.—Leaves of *Nicotiana Tabacum.*

TODDALI, *Bark*—TODDALIÆ CORTEX.—*Toddali chilka.*—Bark of *Toddalia aculeata.*

TOON BARK.—TOONA CORTEX.—Bark of *Cedrela Tunna.*

TORMENTILLA ROOT; TORMENTILLÆ RADIX.—Root of *Potentilla tormentilla.*

TRAGACANTH GUM.—Gum of *Astragalus Verus* and other species.

TREACLE.—SACCHARI FÆX.

TULSI, *Black.*—Seeds of *Ocymum basilicum.*

TULSI, *Sacred.*—Root and herb of *Ocymum sanctum.*

TULSI, *White.*—Leaves of *Ocymum album.*

TURMERIC.—*Huldi.*—Root of *Curcuma longa.*

TURPENTINE.—*(Chian.)*—Liquid product of *Pistacia Terebinthus.*

TURPENTINE, OIL OF—TEREBINTHINÆ OLEUM—Volatile oil of liquid exuded by various species of *Pinus* and *Abies.*

TURPENTINE, *(Venetian.)*—Liquid product of *Abies Larix.*

TURUNJABIN, *Manna of the Desert.*—Saccharine product of the *Alhagi maurorum*, or Camel's thorn, *(Shurtrkar)*, a substitute for manna.

TYLOPHORA BARK.—*Untamol.*—Bark of root of *Tylophora asthmatica*—must not be confounded with *Ununtamul*, the root of *Hemidesmus Indicus.*

UNTAMOL.—See *Tylophora.*

URJUNA BARK.—Astringent bark of *Terminalia alata.*

UNUNTAMUL.—See *Hemidesmus.*

UTR OF ROSES.—See *Rose.*

UVA URSI, OR BEAR BERRY.—Leaves of *Arctostaphylos uva ursi.*

VALERIAN.—VALERIANA.—Root of *Valeriana officinalis.*

VALERIAN, (*Indian*)—Root of *Valeriana Jatamansi.* See *Jatamansi.*

VERDIGRIS.—*Pitrai.*—ÆRUGO.—A diacetate of Copper, is dissolved by muriatic acid except about 5 per 100; almost entirely dissolved by ammonia or by dilute sulphuric acid.

VINEGAR.—See Acetic acid.

VIOLET.—VIOLA.—*Phul Banopsha.*—Recent flowers of *Viola odorata.*

VIRGINIAN SNAKE ROOT.—SERPENTARIÆ RADIX.—Root of *Aristolochia Serpentaria.*

WATER.—*Panee.*—AQUA.—Water for Pharmaceutical purposes should be either rain or distilled—solutions of nitrate of silver or nitrate of baryta, oxalate of ammonia and sulphuretted hydrogen should give no precipitate.

WATER CRESS.—NASTURTIUM.—The leaves, *loot puttia.*—The seeds, *hurufs.*—Herb (recent) and seeds of *Nasturtium officinale.*

WAX.—*Moom*—CERA.—Product of Bee, *Apis mellifica*; the white and yellow kind are to be kept.

WHITE HELLEBORE.—VERATRUM ALBUM.—Rhizoma of *Veratrum Album.*

WILD PEPPER.—*Filfil buree.*—Fruits of several species of *Vitex.*

WINE.—VINUM.—Port Wine and Sherry of the best quality should be kept by the Apothecary.

WORM WOOD.—*Afsunteen.*—ABSINTHIUM.—Herb of *Artemisia Absinthium*, and other species.

——— SEED.—Capsules and seeds of ditto.

WOLF'S BANE.—ARNICA.—Dried Flowers of *Arnica Montana.*

YEAST.—CEREVISIÆ FERMENTUM.—Cryptogamic product of the fermentation of infusions of *Barley.*

ZINC.—*Dusta.*—ZINCUM.—Soluble in dilute sulphuric acid.

ZINC, OXIDE OF.—ZINCI OXIDUM.—White, tasteless, dissolved by dilute sulphuric acid, the solution is precipitated by ammonia, and the precipitate re-dissolved by excess of the alkali.

ZINC, SULPHATE OF.—ZINCI SULPHAS.—See preceding test.

Part IV.

Preparations and Compounds.

ACIDS.

ACETIC ACID.

1*st Variety.*—Distilled Vinegar.

Take of vinegar eight measures: distil from a glass retort into a glass receiver seven measures—dilute with distilled water to the density of 100.5.

2*d Variety.*—Pyroligneous Acid.

Take chips of *Jyntee* wood, *(Æschynòmene Sesban,)* any quantity, and heat gradually to redness in an iron vessel provided with a bent iron tube, and dipping the eighth of an inch under water in an open receiver of glass, wood, or porcelain. On the small scale the iron bottles in which mercury is imported if fitted with a bent gun-barrel answer perfectly. Allow the distilled product to settle for 24 hours, and separate the acid liquor from the matters floating upon it and adhering to the bottom and sides of the vessel. Distil off nine-tenths from a glass vessel.

Acetic Acid.

To the distilled vinegar or pyroligneous acid, add bazar carbonate of soda while there is any effervescence, allow the mixture to settle and clear, decant the fluid and evaporate in a glass or earthen vessel over a charcoal fire, till crystallization commences. On cooling, remove the crystals and heat them very gradually, stirring carefully with a glass rod or wooden spatula, till the odour of acetic acid is perceptible.

Take of this acetate of soda four ounces, strong sulphuric acid eight ounces, (troy weight,) pour the acid on the acetate of soda in a glass retort, and distil from a sand

bath nearly to dryness—cool the receiver by ice or saltpetre, agitate the distilled liquor with twenty grains of red oxide of lead, and after a white and red powder has subsided, decant and redistil.

The density of this acid should range from 1063 to 1067, and one hundred minims neutralize from 235 to 242 grains of crystallized carbonate of soda.

Chemical nature.—In the Materia Medica list, we have enumerated several varieties of vinegar, all of which contain acetic acid in variable quantities. This acid exists also in the sap of several plants, combined with potash, soda or lime, and it is exhaled in the cutaneous transpiration of many animals. It is formed also by the action of oxygenating agents on sugar and alcohol; as in the fermentation of wines and fluids containing sugar, which first passes into alcohol; and in the destructive distillation of several kinds of wood when heated in close vessels.

The molecular changes which take place in the production of acetic acid, in the simplest of the cases above enumerated, are seen on considering the composition of sugar, alcohol, aldehyd and acetic acid. By the fermentation of sugar, one atom of that substance yields two atoms of alcohol and four of carbonic acid.

	Carbon.	*Oxygen.*	*Hydrogen.*
Alcohol contains, ...	4 . .	2 . .	6 atoms.
Aldehyd, ...	4 . .	2 . .	4 „
Acetic acid, *dry*, ...	4 . .	3 . .	3 „
——— (hydrated,)	4 . .	4 . .	4 „

—thus on exposing alcohol to the action of oxygen, two atoms of hydrogen are first removed, by which aldehyd is formed, and the further action of two atoms of oxygen give the formula of dry acetic acid.

Aldehyd, the substance intermediately produced, is a colorless rather fragrant liquid, which is lighter than water, and boils at 71°; it is inflammable, soluble in water, alcohol, and ether, and by oxydizing substances, such as nitric or chromic acid or atmospheric air, it changes into aldehydic and acetic acid. *Acetic ether*, for the preparation of which we give a process, is isomeric with aldehyd, but boils at 165°, and otherwise differs from aldehyd in its secondary properties. This ether is formed in many of the processes for preparing vinegar and acetic acid, to which it imparts a fine aromatic flavour.

Acetic acid, is a colorless fluid which crystalizes at 50°, in large white plates, and boils at 240°—volatile, corrosive and inflammable, of pungent odour, and excessively sour taste. It dissolves or combines with alkalies and many oxides, forming numerous and characteristic salts, also dissolves the resins, volatile oils and camphor. Its composition is carb. 4, hyd. 3, ox. 3 = to 51, 2—and 1 eq. water = 9.

The sp. gravity of the strongest acid is 1063, and of this one hundred minims saturate 242 grains crystallized carbonate of soda. The density of acetic acid is not a certain test of its strength between 1077 and 1063, when any intermediate degree may indicate acids of which one may be twice the strength of the other. These densities must accordingly be checked by ascertaining the neutralizing power. This is most readily done by suspending in a given measure of the acid a weighed fragment of white marble, and weighing it again when the acid is saturated. The loss of weight indicates as closely as required, the quantity of true acid present, as the equivalent of carbonate of lime 50.5, is almost the same as that of PURE acetic acid 51.2.

The usual popular processes for preparing the commercial vinegars are now intelligible. Any fluid containing sugar, such as the juice of the cane, the grape, the tari palm, infusions of malt, &c. if fermented at a temperature above 60°, Fahrt. produce alcohol and carbonic acid. The alcohol thus formed, or that contained in beer, wine, &c. if left in contact with air and leaven or ferment, is further oxydized, and aldehyd and acetic acid produced.

This action is beautifully shewn in a process lately brought to perfection in Europe. If porous paper moistened with weak alcohol be suspended in a jar containing common air in contact with a substance called *platinum black*, the alcohol is rapidly oxydized and converted into acetic acid. The platinum black undergoes no change, its action being of the same kind as that of the platinum sponge in the common Hydrogen lamp.

In Germany a strong acetic acid is obtained cheaply and rapidly by causing a mixture of one part of spirit, four water, and about $\frac{1}{1000\text{th}}$ part of honey or yeast to filter into a cask containing wood shavings, and provided with holes to secure a free circulation of air. A very large surface being thus exposed the alcohol is rapidly converted into acetic acid. The fluid drops from the cask into the receiver and should be repassed over the shavings four times. The action is most effective when the temperature ranges from 75° to 100°. This is a process well calculated to succeed in Bengal. Teak shavings well boiled in water and subsequently steeped in good vinegar should be employed. The cask should be provided with a perforated tray at top to receive the mixture, the perforations being about the size of a quill, and furnished with cotton wicks to moderate the flow of the liquid. The tray should also have four air-holes an inch in diameter, with glass tubes to permit of the circulation of air.

The vinegars obtained from French *grape juice* contain water, acetic acid, acetic ether, alcohol, a colouring matter turned purple by ammonia, bitartrate of potash, &c. In malt, sugar, palm juice and wood vinegars, the colouring matter so affected by ammonia is absent. In British vinegar the manufacturers add 1 part in 1000, (often a larger quantity,) of sulphuric acid. Lead and copper are sometimes present, and are easily detected by the black precipitate occasioned

by passing a current of sulphuretted hydrogen gas through a portion of the acid previously neutralized with ammonia.

The production of acetic acid by the distillation of wood next requires notice. Wood contains carbon, oxygen and hydrogen, and when heated in a close vessel, new combinations of those elements are formed and volatilized, while most of the carbon remains as a fine charcoal in the vessel.

The most remarkable of the products are water, tar, oil, acetic acid, pyroacetic spirit or acetone, aldehyd, and creasote, with xylit, mesit, methól and eblanine, substances of much theoretical, but little practical interest. The liquid first distilled over separates into two layers, the tar and oily matter above, the water, acetic acid and pyroxilic spirit below. This mixture is powerfully acid, and when treated by the method described at the head of this section, yields very strong and pure acetic acid. Instead of neutralizing by carbonate of soda, chalk or carbonate of lead may be used, but we give the preference to the process above recommended.

The acetic acid prepared by the distillation of wood retains a very strong empyreumatic taste and odour, unless the steps of distillation, neutralization, drying and decomposition by sulphuric acid be very carefully attended to. Even when quite free from any empyreuma, it is deficient in the agreeable fragrance of the acid and vinegars obtained from wine. To supply this deficiency we have inserted a process for the preparation of acetic ether, a very few drops of which will give this pyroligneous acid the agreeable flavour required.

Medical Uses.—The *strongest* acetic acid is not given internally. *Externally* it is sometimes, though but rarely, used as a caustic or blistering agent.

Diluted acetic acid is used as a refrigerant lotion, its vapour inhaled in cases of hoarseness and relaxation of the uvula—it is applied with benefit in some chronic cutaneous affections. Internally it is very little employed as a medicine, although it enters into many very useful mixtures either as a solvent or as the promoter of the action of other remedies.

The acetates of morphia, lead and potash and ammonia, the acetic solution of cantharides, colchicum, and squill, and the mixture of vinegar and honey termed oxymel, are its chief Pharmaceutical preparations.

Manufacture of Pyroligneous Acetic Acid in Bengal.—For the assistance of persons desirous of preparing this acid, the Editor appends an account of numerous experiments he carried on, on this subject, by order of Government, in 1838. The subjoined extracts are the substance of the Report addressed on this subject by the Editor to the Medical Board.

I have the honor to report for the information of the Medical Board, that I have completed the experimental inquiries which I was directed to institute respecting the practicability of manufacturing the concentrated Acetic Acids, at the Gunpowder Agency at Eshapore.

In November 1838, I visited on several occasions the Powder Works at Eshapore, and obtained the following information as to the Charcoal Manufacture at that establishment:—

The woods employed are the *Urhur*, (Cytisus Cajan,) and the *Jyntee*, (Aeschynomene Sesban.) The distillation is carried on in iron retorts, constructed in the usual manner; 6 retorts are daily used, but 16 charges of wood are burned. The wood in each slip averages 70 seers, the charcoal obtained 21 seers, the average loss 49 seers. From each retort a tar pipe is led to a small square and open reservoir in brick work, but so little condensation of the volatile liquors takes place, that only 5 quarts of acid liquor are daily collected.

In order to learn exactly what quantity of acid the woods employed were capable of yielding, and also of ascertaining the proportion they would afford compared with other woods and substances, an extensive series of experiments was instituted, of which I beg to add a general description.

One lb. of the wood or other subject of experiment was placed in an iron retort fitted with a delivering tube, the tube led into a vessel kept cold by immersion in water, and connected with a Gasometer, as shewn in the accompanying sketch. The retort was heated in a draught furnace. When no further gaseous products were evolved the acid liquor was collected, measured, and its strength tested by exact neutralization with a solution of anhydrous carbonate of potass, containing 100 grs. in each fluid ounce.

The results are shewn in the subjoined

TABLE.

Substance Distilled	Quantity of Acid Liquor obtained.	1 fluid oz. saturated of Carbonate Potass.	Charcoal obtained.	Gases.
Cytisus Cajan, or Urhur, ...	4 oz.	50 grs.	4 oz.	120 pints.
Aeschynomene Sesban, or Jyntee,	4 do.	56¼	4 ,,	131 ,,
Teak-wood Chips, ...	4 ,,	50	4 ,,	115 ,,
Toon ditto ditto,.....	4 ,,	48	3⅛	109 ,,
Bamboo ditto ditto,.....	4 ,,	37	3⅛	108 ,,
Saul ditto ditto,.....	4 ,,	50	4	128 ,,

The preceding table shews that of the woods therein named, when *carefully* distilled, the Jyntee (one of those used in the Gunpowder Agency) gives the largest quantity of acid.

I next contrasted the strength of this acid with that of specimens collected from different reservoirs at Eshapore, obtained in the Bazar, either of Indian manufacture or imported from England, and lastly with the dilute and concentrated acid of the Hon'ble Company's Dispensary.

TABLE SECOND.

Acid employed.	Strength by Neutralization.
From Eshapore Agency. Jyntee Wood Liquor.	
—— No. 1,.....	54¼
—— No. 2,.....	33
—— No. 3,.....	31
Urhur Wood Liquor.	
—— No. 1,.....	20
—— No. 2,.....	43⅛
—— No. 3,.....	40
A specimen of Bazar (Sugar) Vinegar,....	6¼
Beaufoy's Crystal Domestic Vinegar, ...	25
Acid Acetic of H. C. Dispensary, sp. gr. 1007-50 at T. 73,.....	33¼
Strongest ditto ditto,.....	250

Thus the *Jyntee* wood product is still the best of all the materials from whence the strongest acetic acid can be procured.

Further experiments were made to ascertain the mode of condensation which would yield the maximum quantity of liquor of uniform strength.

As to the results obtained (dismissing inconclusive experiments) I have to report that the mode of condensation by extension of surface of the condenser at common temperatures is that which yields the largest product.

To condense by surface at common temperatures, a series of vessels, equal in capacity to the gaseous contents found by experiment to be evolved by the quantity of wood under operation was adjusted to the retort, with connecting pipes of tarred iron.

By this arrangement the quantity of acid liquor obtained was nearly doubled for all the preceding articles, while the acid strength was the same as before.

From the preceding and subjoined data it is evident, that the Jyntee wood of the charcoal manufactory at Eshapore suffices to yield a very large quantity of pyroligneous acid, in every respect equal to the best made in England, and sufficient for the manufacture of more concentrated acid than there is demand for in India. If 1 lb. of wood yields 6 oz. of acid liquor (average strength 50) 1 maund of 80 lbs. will give 480 ozs. equivalent to 6 pounds of strongest acetic acid.

Now as 2,800 maunds of Jyntee wood are distilled in each season, this is equivalent to 16,800 lbs of acetic acid per annum, which can be furnished from the best of the woods. The Urhur wood, 11,000 md. would give (at 4 lbs. per md.) 44,000 lbs. acetic acid per annum.

In order to render this report complete, it is necessary to enter into some details as to the purification of the acid liquor.

To separate the tar and some other empyreumatic products, *distillation* is first necessary.

The distillation may be performed in copper stills with barrel condensers, as in the first step of the process.

I have examined the strength of the products obtained at each of ten periods of the distillation. The results are stated below, from which the important fact appears that the first liquors are the weakest, and that the strength of the distilled acid increases with great rapidity as the distillation draws to a close.

Distillation of 10 *oz. of Acid Liquor of* 42 *neutralizing strength, equal to* 420 *grs.*

	Strength in grs. of Carbonate of *Potass.*
1st Oz. recd.	..... 29 grs.
2d	..... 31½ ,,
3d	..... 31½ ,,
4th	..... 33 ,,
5th	..... 34 ,,
6th	..... 41½ ,,
7th	..... 41½ ,,
8th	..... 53 ,,
9th	..... 120 ,,
Total *Products*...	414½

The distillation must consequently be pushed until 9-10ths of the quantity distilled are recovered.

The distilled liquor still contains a portion of the volatile oil of tar which gives it a very strong empyreumatic smell, and the property of communicating a brown color to whatever it touches. To rid the acid of this oil, and to bring it to its maximum strength, the following steps are necessary :—

In England it is usual to neutralize with carbonate of lime and then to decompose the resulting acetate of lime by the sulphate of Soda.—Acetate of Soda is thus the final product. In India, Carbonate of Soda is available so cheaply, that we can employ it at first, which simplifies and expedites the process.

As fossil Soda, or *Saji Mati* of Bengal, averages 30 per cent. of Alkali, every 100 lbs. of acid liquor (at 50 neutralizing strength) will require 30 lbs. of Saji Mati. This I state as the mean result of several experiments. The neutralization may be conveniently effected in a tank of masonry or in a planked vat.

The impure solution of acetate of soda is now to be filtered and boiled down to dryness, and the dry mass stirred in an iron pot over a naked fire till the contents *begin to burn.* The residue is again dissolved in water and filtered, and affords pure acetate of soda on crystallization.

Lastly, to obtain the concentrated Acid (250 neutralizing power,) place 1 equivalent, or 83 parts of this acetate of Soda previously deprived of its water of crystallization by heating it in an iron basin, in a glass retort with 80 ounces of concentrated sulphuric Acid, and distil into glass receivers kept cold by Saltpetre, 51 ounces of Acetic Acid of the greatest strength will be obtained.

The total expense of the manufacture may be estimated from the preceding data, reckoned on the produce of the distillation of one maund of wood, yielding *acid* liquor 480 oz. strength equal to 50 grs. of the Carbonate of Potash—this will require of impure Soda, 8½ lbs.

or ⅓th maund, at 2 Rupees per maund, ...	0	4	0
Fuel for distillation and crystallization, ...	0	8	0
9 lbs. 5½rd oz. of sulphuric acid at 2½ annas per lb.	1	8	0
Total, ...	2	4	0

produce 6 lbs. acetic acid—

Deduct 1-6th for loss in the several steps, and the produce will be 5 lbs. at 7½ annas per lb. avoirdupois, or eleven pence sterling. As the vessels employed are of native manufacture and very cheap, 10 per cent. should cover all allowance for breakage. Labour and superintendence I do not charge, because I suppose the primary acid liquor to be collected at Eshapore, the neutralization, and rectification of the strong acid to be conducted at the Honorable Company's Dispensary, without addition to the present establishment of these institutions.

The concentrated acid now imported for the Dispensary costs 2*s.* 6*d.* the lb.

BENZOIC ACID.

Take of Benzoin one pound, place the Benzoin coarsely powdered and mixed with a fourth of its bulk of well washed sand, in an earthen or glass vessel, with a similar one inverted over it, and the edges joined by clay lute.

Heat gradually by a sand bath or over a slow charcoal fire, and continue the heat as long as a sublimate is obtained; collect the sublimate and press between folds of filtering paper to remove some oily matter. Sublime the crystalline matter again.

Bazar Benzoin should yield one-fifth its weight of this acid. The sand is used in order to diminish the cohesion of the softened Benzoin, and expose a greater surface to the heat.

Benzoic acid occurs in very light brilliant, feathery crystals, fragrant when heated, readily volatilized, soluble in 200 parts of cold and 24 of boiling water, freely soluble in alcohol and in alkaline solutions. It is composed of Carbon 14 equiv. = to 84, Oxygen 3 equiv. = 24, Hydrogen 5 equiv. = to 5; the combining proportion is consequently 113. Benzoic acid contains also 1 equiv. of water = 9.

Uses.—It is not prescribed alone, but is an ingredient in the compound tincture of Camphor and the ammoniated tincture of Opium.

CITRIC ACID.

Take of lemon or lime juice four pints, albumen of the egg four fluid ounces, beat well together and boil, skim off the albuminous froth and filter. Boil the filtered fluid again, and while boiling, add powdered chalk till effervescence ceases. Strain through calico, and wash the sediment on the filter with hot water till the washings pass through quite colorless. Remove the sediment, and subject it to strong pressure in a screw press. Reduce this (the citrate of lime) to powder, diffuse it uniformly through a quart of distilled water, and add gradually dilute sulphuric acid, (sp. gr. 1090.) From 25 to 30 ounces will generally be required, the mixture should be constantly stirred. After the addition of the 20th ounce of acid, filter a small quantity of the mixture, and test it with nitrate of baryta. So long as the precipitate is perfectly dissolved by nitric acid, more sulphuric acid is to be cautiously added. When the test indicates a slight excess of sulphuric acid, this is to be removed by the addition of a little powdered citrate of lime. Lastly, filter through calico, wash with cold water and evaporate the filtered liquor and washings on a water bath, till a pellicle begins to form on the surface. Several days are required for the subsequent crystallization.

This valuable acid is a natural product exclusively, and almost peculiar to the fruits of the Aurantiaceæ, in which it is associated with sugar, mucilage, malic acid, occasionally a bitter principle, and small quantities of salts of lime, potash and soda.

The numerous varieties of the lemon and lime in Bengal differ remarkably in the quantity of this acid they contain, and each species again is influenced much by the locality in which it exists, and many other circumstances. As a general rule, it may be stated, that unless a pint of the juice requires an ounce of powdered chalk for its neutralization, the product will be insignificant.

In the process above described, the albumen first coagulates, and removes a quantity of membranous, mucous, and colouring matter. The citrate of lime is then formed and washed, in order to free it from sugar and mucilage. It is then decomposed by dilute sulphuric acid, which forms sulphate of lime, and sets free the citric acid which is dissolved in the water. If any excess of sulphuric acid were employed, it would spoil the process by charring the citric acid in the subsequent evaporation. To guard against this, the use of the baryta test is required. Citrate of baryta is soluble, sulphate of baryta insoluble in nitric acid. When the pellicle forms on the evaporated fluid, the application of heat must be discontinued, as the acid at this point of the process is apt to undergo spontaneous decomposition. Indeed in Lower Bengal, the process will seldom yield satisfactory results, the usual temperature of the air being too high to permit the crystallization.

Chemical Nature.—Pure citric acid occurs in brilliant rhombic prisms. 100 parts are soluble in 75 parts of water at 60° and in 50 of boiling water. It is also dissolved by alcohol. It is a powerful acid, and is composed of Carbon 4 eq. = Oxygen 4 = Hydrogen 2. It is often adulterated with tartaric acid, which is detected by a strong watery solution yielding a fine crystalline precipitate of bitartrate of potash on the addition of muriate of potash. It sometimes contains lime or the tartrate or citrate of lime. This is detected by burning on platinum foil, the tartaric or citric acid is destroyed and the lime remains as a white powder, which on being touched with moistened turmeric paper, gives it a red-brown colour.

Uses.—Citric acid is a valuable tonic, and a useful addition to drink, for fever patients. It was once supposed to be the anti-scorbutic principle of lemon juice, but this is now much doubted. Its chief use in medicine is to make effervescing draughts with the alkaline carbonates. Thirty grains of the acid are used as the equivalent of 50 grains of bi-carbonate of potash, 40 of sesquicarbonate of soda, and 30 of sesquicarbonate of ammonia.

HYDROCYANIC (or *Prussic*) ACID, (dilute.)

Take of ferro-cyanuret of potassium three ounces, sulphuric acid two fluid ounces, water sixteen fluid ounces. Dissolve the salt in two-thirds of the water. Dilute the acid with the remaining third. Let this acid cool, introduce it into a glass retort or mattrass with a bent tube, and add the solution of the salt. Distil with a quick heat till fourteen ounces

pass over, and to the product collected in a glass receiver cooled with ice, add water till the whole is sixteen fluid ounces.

There are several processes by which this important acid may be prepared. The above is nearly identical with that of the last Edinburgh Pharmacopœia, one which we have found preferable to any other. The acid it yields moreover keeps a much longer time than any other preparation.

Chemical Nature.—Hydrocyanic acid when free from water is an anhydrous liquid, composed of 1 eq. of a compound gas, *Cyanogen*, and 1 eq. of Hydrogen.

Cyanogen contains 2 eq. Carbon,	...	=12
1 eq. Nitrogen,	..	=14
		26

Cyanogen is a transparent and colorless gas of heavy narcotic smell—inflammable, highly destructive to animal life. It combines directly with simple bodies, and especially the metals, and with iron forms the well-known Prussian blue.

With iron 1 eq. potassium 2 eqs. and water 3 eqs. Cyanogen forms the salt used in the above process. It occurs in large tabular crystals of fine lemon color. This salt is a valuable test and dye stuff, and is manufactured for the latter use in immense quantities. The mode of preparing it is given under the head of tests.

When heated with sulphuric acid the water is decomposed, its hydrogen with part of the cyanogen forms hydrocyanic acid which distils over with water. Its oxygen unites with the potassium, and the base thus generated with sulphuric acid, forms bi-sulphate of potash. There also remains a yellow salt composed of iron, cyanogen and potassium in different proportions to the original salt, but the properties of which have not been accurately studied.

The hydrocyanic acid thus obtained, consists of water combined with variable proportions of *anhydrous acid.* This formidable substance is never used in medicine, but its mode of preparation requires a cursory notice.

When the dilute acid is agitated with peroxide of mercury in fine powder, for every 54.58 parts of real acid 218 parts of the peroxide are dissolved, and by evaporation and crystallization, we obtain a salt, the bicyanide of mercury, containing 2 equivalents of cyanogen and one of metallic mercury.

When this salt is placed in a glass tube horizontally, and a current of sulphuretted hydrogen gas passed over it, sulphuret of mercury is formed, and hydrocyanic acid vapor set free. The vapor must be condensed in a thin glass phial surrounded by ice.

The condensed liquid is very limpid, transparent, and colorless, sp. gr. 0.696, so volatile that it boils at 80° Fahrt.—Its odour is most oppressive and sickening, and the vapour highly dangerous to life. It dissolves readily in water and alcohol. A single drop of this acid placed on the tongue of a large dog, killed him in 15 seconds; five drops in one of the Editor's experiments, killed a horse in 11 seconds. Placed on the eye-ball of a small animal, it proves fatal with little less rapidity.

It is this anhydrous acid, which with a large proportion of water, constitutes the powerful and valuable remedy, as well as the formidable poison of the several modern Pharmacopœiæ.

There are many other processes by which the absolute hydrocyanic acid may be made, for an account of which we must refer to works on general chemistry. The attention of the Medical practitioner is chiefly required to the preparation, strength, and properties of the *Diluted acid* of the Pharmacopœia.

This is a colorless liquid, having a faint but decided smell of the strong acid. It should contain no more than *three* per 100 of the real acid, but is seldom in the shops stronger than *two* per 100. If exposed to the sun's rays, it is rapidly decomposed, and unless a trace of sulphuric acid be present, it alters in a few weeks, so as to lose nearly all power. Being volatile, it must be preserved in well corked phials, and we recommend that no more than two ounces be kept in each.

It is sometimes adulterated with muriatic acid, to detect which add a few drops of solution of nitrate of silver in a test tube. Boil the precipitate in nitric acid, which at this temperature dissolves the cyanide, but does not act upon the chloride of silver.

Effects as a poison.—In quantities of from ʒii to ʒi, this acid taken by an adult man, proves fatal in a period varying from half a minute to 20 minutes. When the patient survives beyond three or four minutes, convulsions usually occur. In the more rapid cases sudden failure of all nervous energy, cessation of the heart's action, as well as that of the diaphragm and other involuntary muscles, deadly coldness, and the bursting forth of drops of cold clammy sweat are the effects and symptoms which terminate in death. On dissection, no peculiar morbid effects are observable, but the odour of the acid may often be distinctly traced. When the examination is deferred for some hours, the odour and the poison itself may often be detected in the blood, the pericardial fluid, and the serous liquid usually found in the ventricles and at the base of the brain.

Doses.—In *medicinal doses* of from one to three drops, with a table spoonful of water slightly sugared, the hydrocyanic acid is an excellent sedative, allaying pain, checking vomiting, and calming irritation of the intestinal canal. Its action indeed extends, whether by sympathy or absorption, to the most distant organs. It is accordingly given with decided advantage in incipient cholera, colic, gastritic inflammation, and in many spasmodic diseases; especially in

asthma. When long continued, it has been known to occasion profuse salivation.

In cases of poisoning by hydrocyanic acid, the inhalation of ammonia and the cold shower bath are the only remedies of practical value.

Preservation.—Hydrocyanic acid must be kept in well-stoppered or corked glass bottles, covered with paper to exclude the light. The Apothecary is enjoined to observe the utmost care in dispensing this medicine, and to place it in his shop where it cannot be mistaken for any other article.

MURIATIC (or *Hydrochloric*) ACID.

Take of purified and dried common salt, (see *muriate of soda,*) sulphuric acid and water, of each equal weights, mix the acid and one-third of the water and allow the mixture to cool, add this to the salt in a glass retort. In the receiver place the rest of the water. Distil with a gentle heat from a sand bath. Keep the receiver cool by dissolving ice, saltpetre, or sal-ammoniac in the water by which it is surrounded, and renew this from time to time.

MURIATIC ACID, (*dilute.*)

Take of the pure acid, 4 fluid ounces.
Distilled water, 12 fluid ounces.
Mix —— Sp. gr. 1050

In the above processes, the Edinburgh Pharmacopœia is followed in the proportions observed.

The pure muriatic acid thus prepared is nearly colorless, sp. gr. 1170, of acrid and suffocating odour. It does not dissolve gold leaf, and occasions no precipitate in solution of nitrate of baryta. 100 grains neutralize 132 grains of crystallized carbonate of soda.

Pure muriate of soda is composed of chlorine 35.84, sodium 23.3. On adding sulphuric acid decomposition ensues, the chlorine with hydrogen derived from the water forms hydrochloric or muriatic acid gas, (1 eq. chlorine, 1 eq. hydrogen) which is condensed by the water in the receiver. The oxygen of the decomposed water with 1 eq. of sodium forms soda, and this with one equivalent of sulphuric acid produces the sulphate of soda.

The strongest muriatic acid has the density of 1216 and contains 40 per cent. of real anhydrous acid.

Commercial muriatic acid being usually prepared in iron vessels from impure salt containing nitre, is often contaminated with iron and nitric acid ; sometimes it contains also free chlorine. These impurities are thus detected.

Iron.—To one measure of acid add eight of water, neutralize with ammonia. A brown precipitate occurs if iron be present.

Chlorine.—Dilute with water as above, and add a little water tinged blue with a solution of indigo in sulphuric acid. If chlorine is present, the color is bleached.

Nitric Acid is detected by the undiluted acid dissolving fragments of gold leaf.

Sulphuric Acid is detected by adding a solution of the nitrate of baryta to the diluted acid ; a white precipitate falls, insoluble in nitric acid.

The density of the commercial muriatic acid is 1180, its color yellow. It is totally unfit for use as a chemical reagent, or in pharmaceutical processes.

The strength of muriatic acid is most readily ascertained by the quantity of white marble it will dissolve—50.6 parts of marble are equivalent to 36.42 of real muriatic acid. The dilute acid of our Pharmacopœia contains of real acid 10.10 per 100.

Medicinal uses.—This acid is seldom employed internally. Dr. Paris praises it as a preventer of worms, 5 to 10 min. being given frequently with infusion of gentian. Two ounces of muriatic acid with one of nitric acid and two gallons of water constitute the proportions of the nitro-muriatic acid bath of Scott and others, which has been so much lauded as a remedial agent in the treatment of chronic hepatitis and dysentery.

Preservation.—In accurately stoppered glass bottles.

NITRIC ACID, (*Pure*.)

Take of *pure* saltpetre (see nitrate of potash), and concentrated sulphuric acid equal weights, distil from a glass retort from a sand bath heat as long as vapors are given off.

Nitric Acid, (*Dilute*.)

Mix one fluid ounce of this acid with nine fluid ounces of distilled water.

Sp. gr. 1.290.

If commercial acid be used, the proportions should be 3 acid and 4 of water.

1 eq. nitrate of potash contains 1 eq. dry nitric acid = 54; 1 eq. of potash = 47.3 = 101.3; 1 eq. of sulphuric acid contains sulphuric acid 1 eq. = 40.1. and water one eq. = 9, sulphuric acid 49.1. Thus in equal weights, there exist 2 atoms of sulphuric acid with 2 of water, and but 1 eq. of anhydrous nitrate of potash.

When decomposition ensues, the 2 eq. sulphuric acid displace the nitric acid and unite with its potash, forming the bi-sulphate of that base. This salt retains 1 eq. of water, while the remaining eq. of water unites with the nitric acid, forming the hydrate of that substance which is distilled over. Without this proportion of water, the nitric acid cannot exist in the separate state, being decomposed into nitric oxyde (n. 1, ox. 2) and nitrous acid (n. 1, ox. 4.)

The nitric acid prepared as above directed is a pale yellow fluid, sp. gr. 1.500, extremely corrosive, staining the skin yellow and destroying its texture; 100 grains diluted with water saturate 217 grs. of crystallized carbonate of soda. The salts it forms with bases are called nitrates, and from the large proportion of oxygen they contain, many of these are much used in the preparation of several highly inflammable or explosive mixtures. Nitric acid also communicates oxygen to many metals, and then in most cases combines with the oxyde thus formed.

Commercial nitric acid is prepared by decomposing the nitrate of potash or soda by sulphuric acid in cast-iron cylinders. Half the proportion of sulphuric acid above directed is used on the large scale. The residuum in the iron cylinder is the neutral sulphate of potash or soda.

Pharmaceutical uses.—Chiefly for the preparation of hypo-nitrous ether, nitrates of silver, baryta, red oxide of mercury, and ointment of nitrate of mercury.

Medicinal uses.—The dilute nitric acid in doses of 5 to 30 drops with one to two oz. of water, taken thrice daily, is found very serviceable in many cases of obstinate syphilis and chronic hepatitis. It seems to exercise a gentle tonic and diuretic power. Under its use, salivation has been sometimes known to ensue. It is also given in typhoid fevers, and as a lithontriptic in that form of calculus and gravel, in which the phosphates are deposited. But its efficacy as a chemical solvent in these cases seems very questionable, as recent and exact experiments have shewn that the urine is not rendered acid by the use of nitric acid.

Note.—In the Honorable Company's Dispensary, nitric acid is made by distilling 30 lbs. of saltpetre and 20 lbs. of dry sulphate of iron from an iron pot, provided with an earthenware head, and connected with a series of 4 stone-ware condensers on the principle of Woolfe's bottles; the first condenser is empty, the other three contain each two gallons of water. At a red heat sulphate of iron loses its sulphuric acid, and then the decomposition above explained occurs. The residue in the iron pot is sulphate of potash and red oxide of iron. The distilled acid of the Dispensary is of sp. gr

1400, highly coloured, but by redistillation from glass vessels becomes colorless. Its degree of purity depends on that of the nitric employed.

Nitric acid has long been prepared by the Hindu chemists by heating together a mixture of sulphate of iron, alum and saltpetre, and under careful management, their process is economical and productive. But wherever sulphuric acid is available, it is preferred by practical chemists as the most manageable of the different substances by which saltpetre can be decomposed.

Impurities.—These are sulphuric, muriatic and nitrous acids, and chlorine.

Detection of Sulphuric Acid.—Mix 1 fluid oz. of strong acid with 10 of distilled water, and add drop by drop a solution of nitrate of baryta. This will precipitate the sulphuric acid—*of muriatic acid and chlorine,*—to the mixture above described, add a solution of nitrate of silver, chloride of silver is thrown down; of this washed and dried 143.72 parts correspond to 35.72 of chlorine.

SULPHURIC ACID, (*Pure.*)

To purify the commercial acid, distil it from glass retorts, adding for every eight fluid ounces, ten grains of white sugar, (*Ed. Pharmacopœia.*) This removes nitrous acid if any be present. A few cuttings of platinum foil should be placed in the retort, as these are found to moderate the violence of the boiling. A little of the acid first distilled over, should be rejected.

SULPHURIC ACID, (*Dilute.*)

Take of the pure concentrated acid one fluid ounce, of distilled water thirteen fluid ounces, mix in a glass vessel.

The density is about 1.090.

This acid cannot be manufactured on the small scale, and must consequently be obtained from the manufacturer. In Calcutta, there are now three factories in full work, the proprietors of which supply the acid of its maximum density (1.840) at 2 annas the pound of

7,000 grains. In England, the price is less than one penny the pound.

This acid is transparent, colorless, devoid of odour, of oily appearance. Its maximum sp. gr. is 1.847. 100 parts contain 81.54 real acid. It is extremely caustic and corrosive, causing a black stain on organic substances; mixed with water, great heat is evolved. Its neutralizing powers are very great. Several of its compounds are used in medicine; and it is the most generally employed of all pharmaceutical agents in the preparation of the chemical remedies.

On the large scale, it is prepared by causing sulphurous acid, (s. 1 = ox. 2 =), nitrous acid, (n. 1 = ox. 4 =), and water, all in the state of vapor, to mix together freely in a leaden chamber of immense dimensions. An ordinary chamber is 100 feet long, 16 and 20 broad = to 32.000 cubic feet.

The sulphurous acid gas is supplied by burning sulphur in iron pans in a furnace at the entrance of the chamber. The nitrous acid vapor is furnished by a mixture of 8 parts sulphur and 1 part saltpetre, (nitrate of potash) burned also outside the chamber, or by a mixture of nitric acid and sugar. A small quantity of nitrous acid vapor suffices, in practice about $\frac{1}{8}$th part of nitre to the weight of sulphur employed. The steam of water is introduced from a boiler placed near the chamber.

The theory of the reaction of these gases is complex, and we must notice it but very briefly. The sulphurous acid (s. 1. ox. 2,) takes one eq. of oxygen from the nitrous acid, (n. 1. ox. 4,) and becomes sulphuric acid, (s. 1. ox. 3.) This with hyponitrous acid (n. 1. ox. 3,) and with watery vapour forms a crystalline compound, which when dissolved by an excess of water is decomposed, the sulphuric acid being retained in solution, and nitric oxyde, (n. 1. ox. 2,) liberated. This gas when it meets with atmospheric air admitted continually to the chamber takes oxygen from it, again becomes nitrous acid, (n. 1. ox. 4,) and the same changes are repeated while the process lasts.

The acid first formed after eight hours' work, when drawn off from the chamber is of sp. gr. 1.600. It smells strongly of sulphurous acid, contains also nitrous acid, and often sulphur. Nitrous acid is detected by pouring gently on the surface of the suspected acid by means of a dropping tube a concentrated solution of sulphate of iron. If nitrous acid be present, there is a brownish red line formed where two liquids meet. In this case it is purified by filtration through clean sand which separates sulphur. It is then boiled down on leaden pans till it reaches the density of 1700. If the concentration be carried further in these pans, the lead is rapidly acted upon, the acid rendered impure, and the melting of the pan endangered, the melting point of lead and boiling point of the strong acid being about 600° Faht.

The further concentration must be carried on in porcelain glass or platinum vessels. A platinum retort to contain eight gallons

costs £ 500, but such a retort has been worked night and day for twenty years, without any appreciable loss of weight, or other injury, while on an average, one of every four glass vessels is lost in the concentration, and the contents usually escape, and much inconvenience and loss are experienced.

Sulphuric acid may also be prepared by heating to bright redness the sulphate of iron *(heera kasis)* of the bazars. This salt is common in all the bazars, and costs about 2 rupees 8 annas the maund. It is composed of one equivalent of acid, one of protoxide of iron, and seven of water. If two equivalents of this be heated to redness, the water first passes over with one eq. of sulphuric acid ; The second eq. is decomposed into oxygen and sulphurous acid. The oxygen with the protoxide of iron forms the red peroxide of that metal. Sulphurous acid gas passes over with the water.

The operation may be conducted in earthenware retorts or iron bottles. It is very difficult to manage on a small scale. The acid it supplies, may be concentrated in the usual way.

Pharmaceutical uses.—Of these, a few examples will be sufficient to shew its great importance to the practical Apothecary. It is used either in the composition or preparation of the dilute and aromatic sulphuric acid and sulphuric ether, of the sulphates of soda, potash, magnesia, iron, copper, and zinc, in the manufacture of calomel and corrosive sublimate, of the muratic, nitric, acetic, citric, hydrocyanic and tartaric acids. It is also of unlimited application in the arts. The chief consumption in India is in the manufacture of soda-water, for which it supplies the carbonic acid by decomposing the carbonate of lime. In England and America, it is employed to the amount of thousands of tons annually to decompose common salt, and form sulphate of soda for the preparation of the alkali of that name.

Medicinal uses.—Sulphuric acid is a corrosive poison in the concentrated state ; diluted as in our formula, it may be given in 10 to 20 minim doses thrice daily. It acts as a tonic and diuretic, and is a very useful remedy. It is usually prescribed with a little mucilage. In taking this and indeed all other acid remedies, to protect the teeth the mixture should be sucked through a quill or glass tube, and the mouth well rinced immediately with water containing a little carbonate of soda.

Adulteration.—This is very infrequent, but we have known sulphates of zinc and soda fraudulently mixed with the acid in the bazar. This as well as the sulphate of lead are detected by evaporating 100 grains weight to total dissipation ; if any saline substance remains, it is an adulteration. The sulphate of soda and zinc are soluble in water, that of lead insoluble even in nitric acid.

Commercial sulphuric acid has of late been frequently found to contain *arsenic* in minute quantities. The importance of this fact in medico-legal investigations is explained in detail in the Dispensatory, article *Poison.*

TARTARIC ACID.

Take of bitartrate of potash 2 lbs., boiling distilled water $1\frac{1}{4}$ gallons, boil with one gallon of water, and add gradually prepared chalk thirteen ounces, stirring constantly. When the effervescence is over, add a solution of muriate of lime previously prepared by dissolving 13 ounces of chalk in 26 fluid ounces of muriatic acid and two quarts of water. A copious precipitate of tartrate of lime having subsided, separate this by a cloth strainer, wash it well with cold distilled water, then place the deposit in a porcelain capsule, and pour upon it seven pints and seven fluid ounces of dilute sulphuric acid; boil for fifteen minutes, allow the mixture to settle, pour off the fluid, add some distilled water and decant again, mix the liquors and concentrate these by a gentle heat till the mixture assumes a syrupy consistence. Set aside for 24 hours in a warm place to crystallize, re-dissolve in distilled water frequently, and re-crystallize till the acid is white and brilliant.

Tartaric acid combined with $\frac{1}{2}$ an equivalent of potash exists in the unripe fruit of grapes and tamarinds. In the manufacture of wine, this bitartrate of potash subsides and concretes on the interior of the vessels. It is an important commercial article, of much use in the arts. We have prepared it from the tamarind leaves in Bengal more cheaply than it can be procured from Europe, and we use this cream of tartar in the above formula. (*See Bitartrate of Potash.*)

The first step in the above process consists in dissolving the bitartrate of potash, which at 212° requires 15 times its weight of water for its solution, being but difficultly soluble in cold water. On adding 13 ounces of prepared chalk, this gradually neutralizes half the tartaric acid, and insoluble tartrate of lime is thrown down. But as chalk (carbonate of lime) does not decompose the neutral tartrate of potash, we next add the muriate of lime, double decomposition ensues, muriate of potash and tartrate of lime being formed. By boiling with dilute sulphuric acid, sulphate of lime is formed, and tartaric acid set free.

The crystallization of this acid is a troublesome process, but it succeeds best at a uniformly warm temperature, and we have found the manipulation less difficult in Bengal than in Europe.

Tartaric acid when pure, occurs in crystals, is very acid, inodorous, deliquescent in a moist atmosphere, soluble in 5 parts of cold and 2 of boiling water—also soluble, though difficultly, in alcohol. It is totally destroyed by heat. It is composed of carbon 4, hydrogen 2, oxygen 5, water 1 eq.

Medicinal uses.—It is not much used alone, but is chiefly consumed in the preparation of effervescent powders with carbonate of soda.

Twenty-five or thirty grains are used for each draught, being separately dissolved in two ounces of water, then added to a similar solution of 25 to 30 grs. carbonate of soda, and the mixture taken while in a state of effervescence.

Tartaric acid is also similarly used in the administration of the *Rochelle salt,* or tartrate of potash and soda.

Pharmaceutical uses.—Tartaric acid is an ingredient in the invaluable preparation of antimony, named tartar emetic.

It is often adulterated with cream of tartar, which may be detected by its difficult solubility in cold water, and by its leaving an ash on incineration, which effervesces briskly on being tested by any acid.

ALCOHOL AND ETHERS.

Alcohol.

Take of rectified spirit one pint and quick lime eighteen ounces in small fragments.

Mix, and restrain the heat (occasioned by the slaking of the lime) by the application of wet towels to the distilling apparatus, which may be of glass or metal—distil over seventeen ounces, the density of which should not exceed 794 at 79° Farht.

The several varieties of commercial spirits; viz. rum, brandy, arrack, &c. consist essentially of alcohol and water in various proportions.

Alcohol is a compound of Carbon, .. 2 equivalents.
Oxygen, .. 1 ,,
Hydrogen, 3 ,,

Alcohol of this composition is regarded as pure or absolute. It is colorless, transparent, volatile and fragrant, boils at 174°—is very inflammable and an energetic narcotic. It mixes and combines with water in all proportions, and during the mixture condensation of bulk occurs and heat is evolved; thus, 60 measures of absolute alcohol and 40 of distilled water mixed together become warm, and after cooling, occupy the bulk of 96½ measures.

The specific gravity of commercial spirit is the test generally had recourse to in estimating the quantity of pure alcohol it contains. The Excise use the term alcohol to designate spirit of the density of 825. The *rectified spirit* of the Colleges has that of 840. The diluted, or "*proof spirit*" of the Excise is rated at 919; but for pharmaceutical purposes it should not be more than 912, as recommended in the last edition of the Edinburgh Pharmacopeia, as at this density the spirit is a mixture of one volume of water and two of the rectified spirit of commerce. The simplest and most certain mode by which the Apothecary can ascertain the density of spirit, is by the use of the specific gravity bottle, described in the *Bengal Dispensatory, p.* 14.

The following table of the correspondence between the density and proportion per cent. of alcohol by *volume*, is extracted from Dr. Ure's valuable *Dictionary of Arts, p.* 19 *and* 20:—*

The following table gives the per centage of alcohol for the specific gravities corresponding to the accompanying temperatures.

For example: if we have a spirituous liquor at 80° Fahr., whose specific gravity is 0.9342, the alcohol present is 45 per cent. of the volume, or that specific gravity at that temperature is equal to the specific gravity 0.9427 at the normal temperature of 60° Fahr. This table may also be employed for every degree of the thermometer and every per centage, so as to save computation for the intervals. It is evident from inspection that a difference of 5° Fahr. in the temperature changes the specific gravity of the liquor by a difference nearly equal to 1 volume per cent. of alcohol; thus at 35° and 85° Fahr. the very same specific gravity of the liquor shows nearly 10 volumes per cent. of alcohol more or less; the same, for example, at 60 and 40 per cent.

Alcohol per cent.	Temperature.						Alcohol per cent.	Temperature.					
	30° F.	35° F.	40° F.	45° F.	50° F.	55° F.		60° F.	65° F.	70° F.	75° F.	80° F.	85° F.
0	9994	9997	9997	9998	9997	9994	0	9991	9987	9991	9976	9970	9962
5	9924	9926	9926	9926	9925	9922	5	9919	9915	9909	9903	9897	9889
10	9868	9869	9868	9867	9865	9861	10	9857	9852	9845	9839	9831	9823
15	9823	9822	9820	9817	9813	9807	15	9802	9796	9788	9779	9771	9761
20	9786	9782	9777	9772	9766	9759	20	9751	9743	9733	9722	9711	9700
25	9753	9746	9738	9729	9720	9709	25	9700	9690	9678	9665	9652	9638
30	9717	9707	9695	9684	9672	9659	30	9646	9632	9618	9603	9588	9572
35	9671	9658	9644	9629	9614	9599	35	9583	9566	9549	9532	9514	9495
40	9615	9598	9581	9563	9546	9528	40	9510	9491	9472	9452	9433	9412
45	9544	9525	9506	9486	9467	9447	45	9427	9406	9385	9364	9342	9320
50	9460	9440	9420	9399	9378	9356	50	9335	9313	9290	9267	9244	9221
55	9368	9347	9325	9302	9279	9256	55	9234	9211	9187	9163	9139	9114
60	9267	9245	9222	9198	9174	9150	60	9126	9102	9076	9051	9026	9000
65	9162	9138	9113	9088	9063	9038	65	9013	8988	8962	8936	8909	8882
70	9046	9021	8996	8970	8944	8917	70	8892	8866	8839	8812	8784	8756
75	8925	8899	8873	8847	8820	8792	75	8765	8738	8710	8681	8652	8622
80	8798	8771	8744	8716	8688	8659	80	8631	8602	8573	8544	8514	8483
85	8663	8635	8606	8577	8547	8517	85	8488	8458	8427	8396	8365	8333
90	8517	8486	8455	8425	8395	8363	90	8332	8300	8268	8236	8204	8171

Preparation.—In the process we have given, we follow the Edinburgh in preference to the London Pharmacopeia. The object of both is to deprive the rectified spirit of the water with which its

* An additional table, and its use with the Hydrometer, which it would be inconvenient to insert here, will be found in the *Appendix*.

alcohol is combined. The London College use for this purpose dried muriate of lime, *(chloride of calcium,)* a salt which is extremely deliquescent, and separates and combines with water. But its use is open to many objections; it is dear, or troublesome to prepare—it parts with some of the water at the mere heat of distillation, and it does not retain the acrid essential oil, with which most kinds of spirit are associated. Dry carbonate of potash was formerly much employed, but it is difficult, if not impossible, to avoid distilling over much of the water it had separated at a low temperature.

The use of quick lime is free from all these objections. It is cheap, it separates all the water and retains it to very high temperatures, and also retains any acid, and nearly all the volatile oil, with which the spirit may have been contaminated.

Uses.—Alcohol is a solvent of resins, camphor, vegetable alkalies and most of their salts, of the essential oils, and many fixed oils. On this account it is extensively used in pharmaceutical chemistry. When deprived of its atomic water, it is converted into ether as subsequently described; with as much water as constitutes proof spirit it is employed in the preparation of the medicinal "Tinctures" of the Pharmacopeia.

In large doses, alcohol acts as a sedative narcotic poison of great energy. In the treatment of its effects the stomach pump, emetics of sulphate of zinc or sulphate of copper, and the affusion of cold water are the only useful remedies. Diluted alcohol in its numerous popular forms is stimulant, narcotic, intoxicating and diuretic, according to the quantity in which it is employed. Applied externally, strong spirit by its rapid evaporation and the cold thereby produced is often useful as a local application to inflamed parts, or to the head during the excitement of fever. Dr. Christison strongly recommends a mixture of equal parts of rectified spirit and white of egg to be applied by a brush or feather in the early stages of excoriation from pressure in fever and other diseases. A dry albuminous coating forms over the part, and is to be renewed frequently by re-application of the mixture.

ETHERS.

Sulphuric Ether.

Take of rectified spirit fifty fluid ounces, sulphuric acid ten fluid ounces.

Place the acid in a leaden pan and add slowly twelve ounces of the spirit, mix thoroughly with a glass or leaden rod, decant into a glass or leaden mattrass connected with a

tube condenser at least three feet long,* kept cold by a current of iced water or solution of sal-ammoniac freshly made. Heat the mattrass to 280° Fahrt. and when ether begins to distil over, add fresh spirit to the mattrass in a continuous stream, and in equal quantity to the ether distilled. Continue this until forty-two ounces have been collected.

To free this ether from water and sulphurous acid, agitate it in stoppered bottles with sixteen fluid ounces of a saturated solution of muriate of lime and one ounce of quick lime. Pour off the ether which floats upon the mixture, and redistil with a very gentle heat while the product is not of greater sp. gr. than 735.

Sulphuric acid having a powerful affinity for water, abstracts it in the above process from alcohol, which is a compound of oxygen, hydrogen and carbon, in the same proportions as one of ether and one of water.

Thus Alcohol, Carbon 4, Oxygen 2, Hydrogen 6.
Ether, Carbon 4, Oxygen 1, Hydrogen 5.

If therefore we separate one eq. of hydrogen and one eq. of oxygen from alcohol, ether is the result. This may be effected by several acids, by the chloride of zinc and many other reagents. In the action of each, however, peculiar circumstances present themselves which render the phenomena complex, and are important in a practical point of view as affecting the purity of the ether, or the economy of its manufacture.

Sulphuric acid, for instance, not only tends to abstract water from alcohol, but 2 equivalents of the anhydrous acid combine with one eq. of ether forming an acid, termed the ethero-sulphuric or sulpho-vinic acid, and this substance is produced in the above process. When heated, this is decomposed and ether is set free; the anhydrous acid combines with water, but at the temperature of 280° this also is separated, leaving the acid still capable of effecting fresh decomposition of the alcohol supplied; some of the alcohol also passes over, and some parting with all its oxygen is changed into the gaseous carburets of hydrogen, which with carbonic oxyde and carbonic acid, are simultaneously disengaged, and masses of black carbonaceous matter form in the retort or mattrass. This carbon soon reacts upon the sulphuric acid, and sulphurous acid gas is added to the complex products already enumerated.

* See Bengal Dispensatory, p. 40, plate 4, fig. 36.

While theoretically one equivalent of sulphuric acid is capable of converting an indefinite quantity of alcohol into ether, the action is in practice checked by the decompositions above described, and the experience of Dr. Christison shews, that 54 fluid ounces of spirit at 845 yield 20½ fluid ounces of ether, and 10½ fluid ounces of spirit at 845.

The process in the Edinburgh Pharmacopeia, which we have adopted, is that followed in France and Germany, and is far superior in certainty, safety, and economy to the London method. Heat should be applied by a sand bath, and the utmost care taken that the vapours or distilled liquid should not come in contact with the flame, as an explosion would be the certain result. We have been in the habit of carrying on the process with the condenser led through a partition of tin plate, which moreover screens the receiving bottle from the radiation of the sand bath fire. We have found the best apparatus to be a leaden mattrass capable of holding one gallon, of oval shape, with its neck two and a half inches in diameter. A leaden stopper is provided for this, perforated with three apertures; one half an inch in diameter for the discharge pipe, one a third of an inch for the supply pipe, which may dip into the liquid, and which should be connected with a vessel of alcohol standing on a higher level, a cock being interposed to regulate the discharge. The third aperture is for a thermometer, which should be graduated to 300°, and dip into the liquid. The thermometer is the only expensive part of the apparatus, and the only part which cannot be made or procured in any bazar. By a little practical experience however, and by carefully noting the time required for each stage of the process in a few experiments, the thermometer may be dispensed with.

Sulphuric ether is colorless, transparent, fragrant, highly volatile, and produces great cold by its evaporation, boils at 96° and in vacuo below the freezing point of water. When free from alcohol, its specific gravity is 712; above 720 alcohol is present. The pharmaceutical ether of the London College at 750 and of the Dublin at 765, are accordingly to be regarded as impure. Ether is soluble in alcohol, combines with water to the amount of 10 per 100. It dissolves numerous resins, essential oils, and organic alkalies. With atmospheric air its vapour forms a highly combustible, and indeed explosive, mixture. Ether is indeed so inflammable, that it burns on the surface of water. The vapour from an open ether bottle may be set fire to, by a taper at three feet distance. Very numerous accidents have been occasioned by the incautious exposure of this fluid. In 1823 the East India Company's Dispensary was consumed by fire, in consequence of the ignition of the contents of a bottle of ether which an assistant opened at night near a lighted candle.

Uses.—Sulphuric ether is employed externally as an evaporating lotion; the cold thus occasioned giving much relief in many forms

of head-ache and of external inflammations. Its vapour, however, is a powerful narcotic, and as it is almost impossible to guard against its inhalation when the ether is applied to the head, much caution must be observed as to its application in cases of cerebral fever. Taken internally, ether is a powerful stimulant and antispasmodic. Its action, however, very soon passes away. One of its most certain and valuable uses is in the relief it affords in many cases of asthma and of difficulty of breathing, even when dependent on disease of the heart; from a scruple to a drachm (fluid measure) being given with an ounce of water. Dr. Christison strongly recommends its employment in conjunction with an equal quantity of laudanum or solution of muriate of morphia, repeated, if necessary, in twenty minutes.

Spirits of Sulphuric Ether.

Take of sulphuric ether a pint.
,, rectified spirit two pints.
Mix.—— sp. gr. 809.

Ethereal Oil.

In the preparation of sulphuric ether, if the distillation be pushed until the mixture in the mattrass becomes black, the vessel then removed from the fire and the distilled fluid allowed to settle, a light oily liquid floats on the mixture. After exposure to the air for 24 hours, this should be agitated with a watery solution of potash. The ethereal oil sinks to the bottom of the vessel.

Ethereal oil is yellow, rather fragrant, insoluble in water, dissolved by the oils, by ether and alcohol, sp. gr. 1050 to 1130. It cannot be regarded as a definite chemical compound, but it seems to be essentially composed of sulphuric acid 1 eq. and one equivalent of ether. It is accordingly named the sulphate of ether by many chemists. Its only use is as an ingredient in the next article.

Compound Spirit of Sulphuric Ether.

Take of sulphuric ether eight fluid ounces, rectified spirit sixteen fluid ounces, ethereal oil three fluid drachms.

Mix.

This is an imitation of an old and much esteemed remedy—Hoffman's anodyne liquor. It is given in doses of half a drachm to two drachms, but is now seldom prescribed, and is rejected from the Edinburgh Pharmacopeia.

Spirit of Nitrous Ether.

Take of rectified spirit fifteen fluid ounces, nitric acid (strongest) seven fluid ounces.

Place one-third of the spirit with some sand in a glass mattrass, provided with a tube condenser and a safety tube,* the end of which is an inch above the level of the fluid in the vessel, and its bent portion filled with nitric acid. Add through this tube, and very slowly, three and a half ounces of the acid. Allow the effervescence to subside, and then add the rest of the acid by portions of half an ounce, allowing the mixture to become tranquil after each addition of the acid before the next is made. The distilled liquid is meanwhile collected by the tube condenser, through which a current of iced water should be led; it is then freed from water and acid by agitation with half its bulk of a cold solution of muriate of lime and with quick lime, as described under the head of sulphuric ether. The density of this ether should be 899 at 60° Fahrt. The process should be conducted during the cold season and before sun-rise, as the ether obtained boils at 70° Fahrt. The ether is lastly to be mixed with four times its bulk of rectified spirit.

In this process the nitric acid (n. 1, ox. 5,) and alcohol are mutually decomposed, and the result is the production of one equivalent of ether, the same as that described in last section, but combined with one eq. of hyponitrous acid, (n. 1, ox. 3.) At the same time other and very complex re-actions occur, and the oxalic acetic hydrocyanic and cyanic acids, and aldehyd, appear in variable quantities during the operation.

The process we have adopted is that of the Edinburgh Pharmacopeia. The vague directions of the London Pharmacopeia would inevitably lead to dangerous explosions if adopted by inexperienced persons, and would as certainly fail in affording an ether of the desired quality. Too much caution cannot be observed in the admixture of alcohol and nitric acid, not only from the violent effervescence which ensues, but the extremely inflammable nature of the gases evolved.

* See Bengal Dispensatory, page 42, fig. 40.

The mixture of hyponitrous ether and spirit resulting from the Edinburgh formula, is that old and favorite remedy called popularly "sweet spirits of nitre." It is colorless, fragrant, volatile, highly inflammable; by long keeping, it becomes very acid. It combines readily with water which much facilitates its uses as a medicinal agent.

Uses.—This preparation is a very valuable diuretic and daphoretic. It is also stimulant and antispasmodic; from half a drachm to two drachms may be given repeatedly during a day.

"Franks" notorious specific for the treatment of gonorrhea is well imitated by a mixture of one drachm of oil of copaiba, one drachm of oil of cubebs, and one ounce of spirit of nitrous ether—dose 20 to 30 drops, repeated according to occasion.

Acetic Ether.

Take of dried acetate of lead 16 drachms, alcohol (by weight) 4½ drachms, sulphuric acid (by weight) 6 drachms.

Distil from a glass mattrass, and agitate the product in a stoppered phial with a little lime.

This ether is a compound of acetic acid (carbon 4, hydrogen 5, oxygen 1 eqs.) with one eq. of ether (carbon 4, ox. 3, hyd. 3 eqs.) In the above process, the sulphuric acid at the same time evolves ether from the alcohol, and acetic acid from the dried acetate of lead. These substances combine, and the result is acetic ether, a colorless, inflammable, very fragrant fluid; boils at 165°.

A few drops added to a pint of the pyroligneous acetic acid, communicate to it a very agreeable aromatic flavour, and for this purpose it is that we have introduced the article in the Pharmacopeia.

ALKALIES.

Ammonia, Water of

Take of muriate of ammonia and quick lime, of each thirteen ounces, and slake the lime with seven and a half ounces of water. When cool, powder it and mix it well and quickly with the muriate of ammonia, also powdered. Distil from a glass retort or common earthenware jar, connected with a series of receivers; in the first bottle, place four

ounces of distilled water, in the second eight ounces. The receiver and bottles should be kept cold by ice or a solution of muriate of ammonia. The retort should be heated till gas ceases to be evolved, then remove the retort; the liquid in the first receiver should be of the density of 880. To reduce this to the standard of the *dilute* water of ammonia in use in medicine, distil the fluid from the first receiver into the water of the second and third, so as to bring the density of the liquid ammonia obtained to 960. If lighter than this, add distilled water; if heavier, add some of the contents of the first bottle, till the prescribed density is obtained.

The muriate of ammonia is decomposed by the lime, muriate of lime being formed, and gaseous ammonia (a compound of nitrogen, 14, hydrogen 3) being disengaged.

This gas is very pungent and stimulating, irrespirable when pure, not inflammable, very soluble in water. The gas and its solution in water or alcohol are strongly alkaline, reddening turmeric paper, restoring the blue of reddened litmus, saturating acids and forming crytallizable salts.

The dilute solution of the Pharmacopeia contains about 10 per 100 of pure ammonia.

The solution of ammonia is of much use in many Pharmaceutical processes, especially in the preparation of the vegetable alkalies.

Medicinal uses.—Externally applied, it acts as an immediate and powerful counter-irritant and stimulant, causing redness or blackness of the skin, and vesication in a few minutes. For this the strongest solution is to be preferred.

The vapor of the dilute liquid applied to the nostrils is a familiar and very useful remedy in head-ache, fainting, &c.

Internally it is employed with great benefit as a general stimulant and antacid. It is usually given in doses of from 10 to 30 drops in water.

Ammonia must not be prescribed along with acids, or with the earthy or metallic salts; all the latter, except the tartrate of potash and iron, being precipitated by it.

Carbonate of Ammonia.

(Sesqui Carbonate, *Lond.*)

Take muriate of ammonia one pound, chalk one pound and a half, powder separately, mix the powders thoroughly, and

sublime from an earthen vessel into a receiver kept cool by damp towels.

The materials decompose each other, carbonate of ammonia and muriate of lime being produced.

The sublimed carbonate of ammonia occurs in colourless, transparent masses of very pungent odour, soluble in water, insoluble in alcohol, alkaline to test paper, decomposed by acids with effervescence of carbonic acid, decomposed by the caustic earths and alkalies, emitting vapors of ammonia. It loses its transparency and pungency by frequent exposure to the air.

The composition of this salt is 1½ eqs. Carbonic Acid.
1 eq. Ammonia.
1 eq. Water.

Uses.—Stimulant, diaphoretic and antacid—much used with quick lime in smelling bottles, dose 5 grs. to 20 grs. It is emetic in 30 gr. doses.

The muriate of lime, which constitutes the residue in both these operations, is to be heated to dryness, and preserved in stoppered bottles, for use in several Pharmaceutical processes.

Solution of Carbonate of Ammonia.

Carbonate of ammonia four ounces, distilled water one pint, dissolve.

Dose ʒj to ʒii with water or milk.—*Uses*, the same as of the ammoniacal preparations above-mentioned.

Solution of Acetate of Ammonia.

Take of distilled vinegar (sp. gr. 1.005) 24 fluid ounces, carbonate of ammonia one ounce.

Mix and dissolve, and add a little distilled vinegar till any bitter taste is removed; sp. gr. 1.011.—*Ed. Ph.*

This solution is the "Mindererus' Spirit" of the Practitioners of the last century; much attention should be paid to the specific gravity, which is a sufficient check on the strength and purity of the preparation. If stronger than 1.011, the usual dose given as a diaphoretic causes vomiting.

In doses of two drachms to one ounce every three hours, this solution is a very useful and certain diaphoretic, and is accordingly prescribed with great advantage in fevers, rheumatism, and the milder inflammatory affections of the chest.

MURIATE OF AMMONIA, (*Refined.*)

Take of bazar sal-ammoniac two pounds, dissolve in boiling water, strain through fine calico while hot, and allow the solution to cool and crystallize, strain and dry the crystals between folds of paper.

This valuable salt is the *nowshadur* of the bazars, where it is found in a sufficiently pure state for its most important use, the preparation of the ammoniacal compounds of the Pharmacopeia; but as it often occurs in too coarse a form even for this use, a simple method of refining is given in the above formula.

Muriate of ammonia is a volcanic product, and is also the result of the decomposition of many animal matters; the dung of camels when roasted with common salt, yields it in sufficient quantities to be the chief source of the salt in India and Egypt. In England it is now manufactured from the ammoniacal salts contained in the liquor resulting from the distillation of coal in the gas works. Sulphuric acid is added, and the sulphate of ammonia thus produced, is decomposed by muriate of soda.

Muriate of ammonia is sold in the bazars in thick fibrous semi-translucent cakes, devoid of smell, of bitter acrid taste. It sublimes when heated, dissolves in its own weight of boiling, or three times its weight of cold water. The hot water solution yields a copious deposit of fine feathery crystals. During its solution in water, the temperature falls several degrees, and this property is accordingly turned to account where ice is not procurable as a mode of cooling various beverages, or to aid the condensation of vapours in pharmaceutical experiments. Muriate of ammonia is an anhydrous salt, and contains one equivalent of each of its constituents, or 17.15 ammonia and 36.42 hydrochloric acid.

This salt is very little prescribed internally; a lotion composed of one part of muriate of ammonia, dissolved in 24 parts of rectified spirit, and the same quantity of distilled vinegar, is much used as an external application to bruised parts and indolent tumours.

ANARCOTINE.

Take of best Bengal opium 2lbs., alcohol at 835°, two gallons.

Break down the opium by the hand in one-third of the spirit; when reduced to pulp, add the second, strain through

cloth and press strongly; knead the mass with the last third of the spirit, and strain and press as before; unite the liquors. To these add enough of the strongest ammonia to cause the mixture to restore reddened litmus paper to a blue colour; distil immediately, till two-thirds of the alcohol are drawn off. Remove the still from the fire, and decant the fluid into a glazed basin. Let this stand for 12 hours in a place protected from dust.

Collect the crystals which have formed, press them in cloth, and wash them well with distilled or rain water. The washings may be thrown away. Diffuse the mass through two quarts of water, and add by degrees one ounce of muriatic acid. Pour off the liquor and repeat this process, mix the liquors and then add pure ammonia water in slight excess. Throw the precipitate on calico, wash it with two or more affusions of soft water, then press into cakes and dry in the air stove at 130° till it ceases to lose weight.

Properties.—Snow white, not crystalline, insoluble in water, very soluble in ether, soluble in hot alcohol, from which it crystallizes on cooling, soluble in dilute acids, with which it forms uncrystallizable salts. The solutions are intensely bitter, and are turned bright yellow by nitric acid. It is not narcotic in any degree.

In the process above described, the spirit dissolves the meconates and other natural salts of morphia and anarcotine present in the opium, leaving an insoluble mass of gluten and caoutchouc; ammonia being added decomposes these salts, and liberates the alkaloids, which however remain dissolved in the spirit, together with the salts of ammonia thus formed. On boiling the liquid, the morphia decomposes the ammoniacal salt, becomes sulphate and meconate of morphia, and remains permanently dissolved. The anarcotine does not decompose ammoniacal salts at any temperature, and is therefore deposited by the concentration of the solution.

The crystals are coloured brown, and contain much resin and meconate of ammonia, a salt difficultly soluble in alcohol. This is perfectly removed by the washing with distilled water.

The resin is separated by the washing with dilute muriatic acid, which dissolves the anarcotine. The solution is of a splendid purple colour, owing to the action of the acid on the *meconin* of the opium. 2lbs. of opium yield by this process, one ounce of anarcotine.

The experiments of the Editor of this work, repeated by many officers in all parts of India, have led to the conclusion, that anarcotine is after quinine the most powerful febrifuge we possess. In doses of 3 to 5 grs. dissolved in water, acidulated by muriatic or sulphuric acid, and repeated thrice daily, it will prevent the return of ague in all ordinary cases. It has succeeded in many instances in which quinine failed, and has not been unsuccessful in a greater proportion of cases.

Its powers are not so well established in the treatment of remittent fevers, and we should recommend quinine in preference, because its qualities are proved, and the disease admits of no delay or trifling. But in the event of quinine not being available, or of its use producing the intolerable head symptoms it is known to occasion in many persons, then anarcotine may be boldly had recourse to.

When properly prepared in the manner we have described, it is entirely devoid of any narcotic properties, except those which quinine itself possesses, and the production of which by both, confirms the identity of their action on the system.

In ague complicated with dysentery, anarcotine is decidedly superior to quinine, as it does not aggravate the local inflammation, but seems on the contrary, to allay the pain and tenesmus.

We append in the note,* the names of the medical officers on whose reports, corroborative of our own experience, we advance the opinions above recorded. They state, that next to quinine, this substance is the best febrifuge hitherto discovered; that it only requires to be given in doses of one-third to one-half greater; that thus administered it will cure all ordinary agues, and a large proportion of those of a more complicated kind; that it is not poisonous in the least degree; and that the idea of its being so, originated in its being, by the nature of the processes used in its preparation, necessarily contaminated with morphia.

In 20 grain doses dissolved in acidulated water, anarcotine is powerfully diaphoretic. In one grain doses, thrice daily, it is a valuable tonic, and has been found especially serviceable in convalescence from parturition, and in the debility which so often succeeds nursing in this country.

The chief value of anarcotine consists in its supplying an easily available and comparatively cheap *local* substitute for quinine, whenever this inestimable remedy is scarce in the market, or its supply interfered with by accidental circumstances, such as those which took place in 1833, when quinine sold in Calcutta for 80 Rupees the ounce.

* Dr. Stewart, Presidency Surgeon, Calcutta; Dr. Drummond, Surgeon to the Governor General; Dr. Chapman, Presidency Surgeon, Calcutta; Dr. Strong, Surgeon to the Mysore Princes; Dr. Green, Civil Surgeon, Howrah; Dr. Egerton, Surgeon to the Eye Infirmary; Dr. Goodeve, Professor in the Medical College; Mr. R. O'Shaughnessy, Surgeon of Calcutta; the late Dr. Bain, Police Surgeon; Dr. Rolland; Dr. Smith, Civil Surgeon, Hidgelee; Dr. Dicken, Balasore; the late Dr. Sheriff, Horse Artillery, and several Native Practitioners.

Incompatibles.—All alkalies, alkaline earths, and alkaline carbonates, by which the anarcotine is precipitated and rendered inert.

Anarcotine, (*Crystallized.*)

Boil the anarcotine of the last process in rectified spirit in a glass flask, filter through muslin, and allow the solution to cool slowly. Beautiful crystals are thus produced, and 9-10ths of the spirit can be recovered by distillation.

(The muriate of anarcotine first advised by the Editor of this work, having been found extremely deliquescent, is no longer recommended; the extemporaneous preparation of the muriate should be always preferred.)

Morphia, Muriate of.

Take the last opium liquor from which *anarcotine* has crystallized in the process under that head. For the quantity obtained from two pounds of opium add two ounces of dried muriate of lime, dissolved in eight ounces of distilled water. Mix thoroughly, and set the mixture aside to settle, strain through cloth, and wash the cloth with ten ounces of distilled water, adding the washings to the strained liquid.

Evaporate the liquid on the water bath at the temperature of 160°, till a drop placed on a cold surface concretes into a crystalline mass.

Allow the whole to cool, squeeze the mass, and press it. Re-dissolve in distilled water, a little finely powdered marble being added to saturate any excess of acid; filter after agitation, add a drop or two of muriatic acid till the liquid faintly redden litmus paper, and then proceed as before to a second crystallization and expression. A white and uncrystalline mass will be obtained.

2d Process.

In this process we use opium not previously deprived of its anarcotine.

Take Opium,..... 20 ounces.
„ Water,..... 8 pints.

Break the opium down into a pulp by the fingers in the water, strain and press. Concentrate the watery solution over the water bath to a thick extract. Dissolve this in warm water, boil and add one ounce of muriate of lime dissolved in four ounces of distilled water.

The remaining steps of the process are the same as in No. 1.

Remarks.—The first process gives both the anarcotine and morphia, the second the latter only. The use of muriate of lime is derived from the Edinburgh process.

The watery solution of opium contains the natural acetate, sulphate and meconate of morphia and anarcotine. When concentrated and muriate of lime added, double decomposition ensues. Muriates of morphia and anarcotine are formed in solution, and meconate and sulphate of lime thrown down. When the solution of muriate of morphia and anarcotine is concentrated, the muriate of morphia crystallizes, while that of anarcotine remains in solution.

In the Editor's process, No. 1, the anarcotine having been previously removed, the muriate of morphia crystallizes by itself.

In the product obtained from Bengal opium, the muriate of morphia is always accompanied by *Codeia*, (see that head in the Dispensatory,)—often as much as 8 per 100. Codeia is an acrid stimulant of the convulsive narcotic class, and moreover a strong emetic; for this reason it becomes essential to separate this principle by a further process.

Muriate of Morphia, *(Purified.)*

1*st Step.*

Dissolve the muriate of morphia in distilled water, add ammonia drop by drop, stirring repeatedly till the liquid smells strongly of the ammonia; filter quickly through cloth and wash the precipitate with a little very weak spirit.

This precipitate is pure morphia, the codeia remains in solution as a triple muriate of morphia and codeia. The codeia may be obtained from this by evaporating to the consistence of thin syrup from a water bath, and adding a concentrated solution of pure potash so long as any precipitate occurs—filter, wash with a little cold water. Dissolve the precipitated codeia in boiling spirit; it crystallizes as it cools.

2*d Step.*

Take of pure morphia any quantity, add pure muriatic acid drop by drop till the morphia is dissolved, agitating fre-

quently. Evaporate at 160° from a porcelain vessel over a water bath, till a drop concretes into crystals when removed to a cold surface. Allow the fluid to cool, press the spongy mass and dry it at 120°. The expressed liquor further evaporated yields more muriate of morphia.

By this method ordinary Bengal opium yields anarcotine 3, muriate of morphia 3½ per cent. 10 parts of muriate of morphia correspond to 9½ parts of crystallized morphia.

Properties.—Muriate of morphia is white, semicrystalline, permanent in the air, soluble in 14 parts of water at 84° and in 6 parts of boiling water; solutions intensely bitter, and highly narcotic, decomposed by all alkalies, alkaline earths, and the carbonates of the alkalies—soluble in alcohol—the solution crystallizes on concentration, but the crystals fall into amorphous powder on drying.

Medicinal Uses.—The muriate of morphia is the most valuable of all the sedative preparations of opium, allaying spasm, and inducing sleep when administered in doses of one grain,* and without causing the head-ache and restlessness, which so often follow the use of the common preparations.

The quantity of codeia present in many specimens of the salt is so considerable, as to interfere materially with their medicinal effects; vomiting and gastric irritation is a common effect of the drug as we meet it in Bengal. The purified muriate prepared as above recommended, is quite free from this objection. For the properties of codeia, see *Dispensatory, p.* 177.

In the London process for preparing muriate of morphia, the chloride of lead is recommended, instead of the muriate of lime, for precipitating the meconic acid. The large quantity of water which the chloride of lead requires for its solution, is a serious objection to its use. The water has all to be dissipated by evaporation, and every circumstance which prolongs this process, is a great evil. The size of the vessels used should moreover be so much enlarged, as to render it impracticable to use porcelain or earthenware, the only vessels from which a pure product can be obtained. For the composition of morphia and its salts, the reader is referred to the *Dispensatory, p.* 176.

Acetate of Morphia.

Dissolve morphia in 12 parts of warm water, adding pure acetic acid till this be in slight excess; concentrate, crystallize, press, and re-crystallize the expressed liquor.

* The Editor of the London Pharmacopeia says, 1-8th to 1-11th of a grain, but no useful effect can be expected from such small doses.

Acetate of morphia contains,

Acetic Acid, ...	15.23
Morphia, ...	84.77
	100.00

The Editor of the London Pharmacopeia erroneously attributes the sickness and head-ache, sometimes caused by this preparation, as well as the muriate, to the anarcotine he supposes them to contain. But the process followed by the London and Edinburgh Colleges, renders it impossible that anarcotine can be present. Codeia is necessarily associated with it as we have already shewn, and this principle it is, which produces the effect complained of.

The acetate is a much less certain and valuable preparation than the muriate, which should be always preferred.

ACONITINA OR BIKYA.

Take of the roots of SINGEEA BISH, (*Aconitum Ferox*,) 2 lbs. rectified spirit, 8 pints.

Divide the spirit into two portions, and successively boil the powdered root with each portion, straining and pressing. Reunite the liquors. Distil off two-thirds of the spirit. Evaporate the residue to dryness in a water bath. Dissolve the extract in 6 ℥ of water acidulated with one drachm of sulphuric acid, filter and add ammonia in slight excess; allow the deposit to subside, decant the clear liquor, and filter the thicker portion through fine muslin. Dry between folds of blotting paper, and on a hot-water plate.

Remarks.—This process differs from that given in the London Pharmacopeia in the extract being evaporated to dryness, and treated directly with the dilute acid, instead of a watery extract being made and again evaporated. While these modifications are invariably successful in yielding a good product, the London process is liable to failure.

Properties.—Soluble in 150 parts of cold and 50 of boiling water, also soluble in alcohol and ether, crystallizes with difficulty; alkaline, melts on the application of heat, calcined with nitrate of ammonia is totally destroyed. The taste is bitter and acrid, the salts it forms with acids do not crystallize.

Effects and Uses.—A formidable poison, 1-10th of a grain killed a goat in one of the Editor's experiments in 12 minutes. The animal

evinced severe distress and died in convulsions. The pupils were widely dilated.

It is not given internally, but is used as an ointment, one grain being mixed with a drachm of lard. It is an invaluable local application in many forms of neuralgia, especially in *tic doloroux*. It almost immediately occasions a tingling sensation in the part, then numbness, and relief of the pain.

DATURIA.

Take of the seeds of the DATURA (white or black) 1 lb. in fine powder. Boil for an hour in 3 pints of *proof spirit*, filter while hot and put into a stoppered bottle; add 100 grains of magnesia. Agitate the mixture frequently during 24 hours, collect the precipitate and boil for a few minutes with 12 ounces of rectified alcohol and one drachm of purified animal charcoal; filter, evaporate to one-half, and set aside. Crystals of daturia gradually form.

These are to be purified by solution in water acidulated with sulphuric acid, again precipitating by magnesia, re-dissolving in alcohol, and crystallizing as before.

Remarks.—Daturia crystallizes in brilliant colourless prisms, is alkaline, inodorous, of slightly bitter acrid taste, soluble in 72 parts of boiling and 280 of cold water; very soluble in hot alcohol, but slightly in ether, is excessively poisonous; its salts dissolved in water dropped into the eye, cause immediate and great dilatation of the pupil, an effect which sometimes lasts for several days.

Daturia is totally dissipated by burning with nitrate of ammonia. Its salts are highly crystalline, and in concentrated solutions, give to alkalies a flake precipitate of daturia.

Uses.—We have introduced this preparation which can be readily and cheaply made in Bengal, as a substitute for the Extract of Belladonna of the European Pharmacopeia.

Belladonna is of inestimable value to the oculist in enabling him under many urgent circumstances to cause dilatation of the pupil; for instance in inflammation of the iris, previous to the operation for cataract, &c.

The Extract of Belladonna, however, seldom reaches India in an active state, and never retains its activity beyond one season; one grain of neutral sulphate of daturia dissolved in one ounce of water affords a solution, two drops of which introduced into the eye will occa-

sion immediate dilatation of the pupil. It seems to be a perfect substitute for the Belladonna.

The corresponding alkali of Belladonna, *Atropia*, is difficult of preparation and preservation, and its volatility a source of much danger to the operator. Daturia is not volatile, is easily made, and does not spoil on keeping; its precise composition is unknown.

QUININE, SULPHATE OF

1st Stage.—Take of powdered cinchona bark 1 lb., boil in a glazed earthen vessel for half an hour in 1 gallon of water, acidulated with ½ an ounce of sulphuric acid; strain.

2d.—Repeat this with the bark left on the strainer, fresh water and acid, wash the bark well with warm distilled water, and unite the strained liquors.

3d.—To the mixed liquors (cooled) add carbonate of soda in powder, till the acid is neutralized. Collect the precipitate on a calico filter and wash it with distilled water.

4th.—Boil the precipitate in rectified spirit till nearly all is dissolved; filter. Recover 2-3ds of the spirit at 180°, and evaporate the last third from the water bath to dryness at 120°.

5th.—Powder the residuum and diffuse it through three ounces of boiling distilled water, add sulphuric acid drop by drop, stirring repeatedly till the whole is nearly dissolved; filter while hot, let it stand till crystals begin to form, then set aside to crystallize.

6th.—If the crystals are discoloured re-dissolve in water, and add two drachms of purified animal charcoal, digest together with a gentle heat for six hours, strain and re-crystallize.

Remarks.—This process is inserted, although it will perhaps never be performed by the Indian druggist, in order to afford him a guide to the examination of barks supposed to contain quinine or some analogous principle.

By boiling in the acidulated water, a sulphate of quinine is formed and dissolved.

From this solution, the quinine is precipitated with some resin and lime, as carbonate and sulphate of those bases, No. 3.

In step 4, the alcohol dissolves the resin and quinine, and leaves the sulphate and carbonate of lime. In No. 5, the resin is separated and di-sulphate of quinine formed. Step 6, is for the purification of the crystals.

Quinine uncombined with an acid is not used in medicine; for its properties see the *Dispensatory, page* 390.

With sulphuric acid it forms two salts, the *sulphate* (sulphuric acid 1 eq. = 40, quinine 1 eq. = 162, water 8 eqs. = 72 = 274) and the *di-sulphate*, (sulphuric acid 1 eq. 40, quinine 2 eqs. = 324, water 8 eq. = 72 = 436.)

It is the di-sulphate which is used in medicine. It is of pearly lustre, in silky crystals, very bitter, soluble in 30° of boiling and 740° of cold water, and 80° of cold alcohol. If heated it melts like wax; by further heating with nitrate of ammonia it is totally dissipated.

At 212° it loses 2 eqs. of water, at 240°, 2 more eqs. For the mode of examining sulphate of quinine and detecting its adulterations, see the list of Materia Medica.

Sulphate of quinine should not be prescribed with alkalies, their carbonates, or the alkaline earths.

Medicinal Uses.—This invaluable salt is the most powerful of all febrifuge and antiperiodic remedies. In doses of from 3 to 4 grains it prevents the return of ague in a vast proportion of cases, and in the treatment of remittent fevers, it is our only trust-worthy remedy for preventing the return of the paroxysm.

Sulphate of quinine very commonly induces some distressing nervous symptoms, especially ringing in the ears, confusion of ideas and restlessness. In some persons this affection is so distressing, as to render the remedy inadmissible; in such cases anarcotine will be often found to answer.

It is also an excellent general tonic when given in doses of 1 to 3 grains thrice daily.

In administering quinine in intermittents it is considered by most practitioners, that this should only be done when there is a moist skin, a cool head, and after the bowels have been fully relieved.

STRYCHNINE.

Take nux vomica seeds 1 lb., strew them on a net with fine meshes placed over a pot of boiling water, and steam them for two hours or longer, turning them frequently. After this, chop them down and dry thoroughly in the hot air-stove at 140°; grind in a coffee mill.

2d. Macerate the powder in a quart of distilled water for 12 hours, boil, strain, express. Repeat this and unite the expressed liquors.

3d. Boil down the liquors to the consistence of thin syrup, and add one ounce and a half of quick lime made into a cream with water. A precipitate occurs, collect this and dry it at 140°.

4th. Powder the precipitate, and boil it with rectified spirit till this ceases to be rendered bitter.

5th. Distil off the spirit to one quarter; allow the remainder to crystallize by cooling and spontaneous evaporation. The strychnia may be purified by a second solution and crystallization.

Remarks.—This process was devised by *M. Henry*, and is adopted by the Edinburgh Pharmacopeia. Henry states, that a killogramme (one seer) of nux vomica seeds will yield by this method about 1-200th part of strychnine. A nearly similar method was published by Dr. Pearson of Calcutta in the *Journal of the Asiatic Society* for 1833, p. 42. It is far superior in facility of management, economy and productiveness, to the method given in the London Pharmacopeia, which omits moreover the indispensable step of steaming the nuts. These cannot be reduced to powder if the steaming be neglected.

In our process, the natural strychnate of strychnine is dissolved by the water, and separated by the lime; the strychnine is dissolved by the spirit and crystallized.

Strychnine is alkaline, crystalline, colorless, devoid of odour, most powerfully bitter. It requires 6600 parts of cold, and 2500 of boiling water for its solution. It is insoluble in alcohol or ether. With acids it forms neutral crystallizable salts, all of which are formidable poisons.

A single grain of strychnine dissolved in a few drops of acidulated water, destroys a large animal in about a minute and a half, in frightful paroxysms of tetanic convulsions.

Medical Uses.—In doses of $\frac{1}{8}$th of a grain, it is given internally in the treatment of paralysis in the conditions described under the head of Brucine. It is also made into an ointment, and used externally in some paralytic cases, and in amaurosis; a blistered surface having been prepared, and the strychnine ointment used as a dressing.

For impurities and their tests, see the list of Materia Medica, also see the *Dispensatory, page* 438.

BRUCINE, SULPHATE OF.

Take of koochila bark (*bark of Strychnos Nux Vomica tree*) 1 lb., treat it with the same ingredients, and precisely in the same manner as in the process for *sulphate of quinine*, 1st and 2d steps.

3. To the filtered liquor add a solution of nitrate of lead avoiding any excess of the precipitant, strain and evaporate nearly to the consistence of syrup.

4. Add carbonate of soda in slight excess, strain and collect the precipitate, and then proceed as in the sulphate of quinine process to the end.

Remarks.—The description of the quinine process applies to this with very slight modification. Step No. 3 is recommended, in order to separate the sulphuric acid and some resin, which would interfere with the further stages of the process.

For the properties and composition of the Koochila bark and Brucine, consult the *Dispensatory, page* 437, 38.

Medical Uses.—*Sulphate of Brucine* is a convulsive tonic of great power; in doses of half a grain to one grain thrice daily it is found very valuable in the treatment of those forms of paralysis which do not depend on organic disease, inflammatio, nor extravasation. It possesses considerable antispasmodic virtues, being capable of curing many varieties of agues of long standing. But its use should not be recommended in remittent fevers.

In paralysis it is usually found that slight convulsive movements in the paralyzed parts precede the successful issue of the case.

Great caution must be observed in its administration, as in doses of more than three grains it is a formidable poison, causing death by tetanic convulsions. When an over-dose is accidentally taken, instant vomiting is the only remedy on which the least dependence can be placed.

CONFECTIONS.

Confection of Almonds.

Confectio Amygdalarum.

Sweet almonds eight ounces, gum arabic one ounce, white sugar four ounces.

The almonds are to be blanched by steeping in tepid water, then beaten into a paste, and incorporated with the other ingredients. The mixture should be made only when required, as it soon becomes mouldy.

The above articles occur of good quality in the bazars.

Use.—For preparation of *Almond mixture.*

Aromatic Confection.

Cinnamon two ounces, nutmegs two ounces, cloves one ounce, cardamoms (husked) half an ounce, saffron two ounces, prepared chalk sixteen ounces, sugar two pounds.

Powder separately, then mix intimately and preserve in a well-closed vessel. When required, incorporate the mass with the necessary quantity of water to make it into a stiff paste.

All those ingredients are procurable in the bazars, except the prepared chalk, for which a formula is given elsewhere.

Use.—Stimulant dose, grs. ℈i. to ʒi.

Confection of Cassia Fistula, (*Amultas.*)

Cassia pulp half a pound, *Manna a.* two ounces, tamarind pulp one ounce, syrup of roses eight fluid ounces.

Dissolve the manna in the syrup, mix in the pulps, and evaporate the mixture on a water bath to the consistence of a thick but soft mass.

a. Purified *turunjabeen*, the manna of the desert, found on the *Shutr Khar* (Alhagi Maurorum) may be substituted for the manna.

Use.—Purgative, dose ʒii. to ʒi.

Confection of Opium.

Hard opium powdered, six drachms, long pepper one ounce, ginger two ounces, *caraway*, *a.* three ounces, *tragacanth*, *b.* powdered, two drachms.

Powder the ingredients, mix intimately, and preserve in a close vessel. When required for use, add sixteen fluid ounces of hot syrup.

a. The black caraway (*zeera seah*) may be used instead of the English article.

b. Picked *katira* gum may be substituted for the tragacanth.

Use.—Narcotic —— dose 20 to 30 grs.

N. B.—Ordinary opium cut in thin slices and heated on the water-bath may be dried efficiently without loss of narcotic power.

Electuary of Opium and Catechu.

Catechu, *Kino*, *a.* four ounces each, cinnamon and nutmeg, each one ounce, opium diffused through a little sherry, one drachm and a half, syrup of red roses of the consistence of honey, one pint and a half.

Powder the solids, mix the opium and syrup, then the powder, and beat into a uniform mass.

a. For kino the *palass goond* (gum of *butea frondosa*) may be substituted.

Medicinal Use.—A valuable sedative and astringent remedy, dose ℈i to ʒi.

Confection of Orange Peel.

Confectio Aurantii.

Fresh orange rind, rasped, one pound, white sugar three pounds.

Incorporate thoroughly in a stone mortar with a wooden pestle.

A useful adjunct to stimulant and carminative pills. It is not used by itself.

Confection of Black Pepper.

Confectio Piperis Nigri.

Black pepper, *elecampane root, a.* each one pound, *fennel seeds, b.* three pounds, honey clarified, and sugar each two pounds.

a. For elecampane root (*inula helenium*) we recommend the substitution of the *goonch* root, *Abrus precatorius.* The Edinburgh Pharmacopeia uses liquorice root. *b.* For the fennel seeds of the London preparation, the seeds of Panmuhori, or *Sonf,* (Fœniculum panmorium,) are an adequate substitute.

Uses.—Only employed as an external application to piles in cases unattended with inflammation. It is nearly the same as the nostrum, called "Wardes' Paste."

Confection of Red Roses.

Confectio Rosæ Gallicæ.

Red rose petals one pound, sugar three pounds.

Bruise the petals in a stone mortar, add the sugar and mix thoroughly.

Use.—Chiefly as an addition for pills and confections.

Confection of Rue.

Confectio Rutæ.

The herb of dried rue *a.* caraway seed, *b.* each one and a half ounce, sagapenum half an ounce, black pepper two drachms, and clarified honey sixteen ounces.

Rub the dry ingredients together to fine powder—add the honey and mix when required.

a. The *sudab* of the bazars of N. W. India, *b.* the *zeera seeah* (black caraway,) may be substituted.

Use.—Occasionally in injections in hysteric cases.

Confection of Scammony.

Powdered scammony, one ounce and a half. Cloves bruised, ginger powder, each six drachms.

Rub together to a fine powder; when required for use mix with syrup of roses as much as requisite and add *a. oil of caraway*, half a fluid drachm.

a. The essential oil of cubebs may be substituted for this.

Use.—A valuable cordial cathartic, dose 30 grs. to ʒi.

Confection of Senna.

Senna, eight ounces, figs, *a.* a pound, tamarind pulp, cassia pulp, and *prunes*, *b.* each half a pound, coriander seed, four ounces, and liquorice, *c.* three ounces.

Triturate the senna and coriander, sift and take ten ounces of the powder. Boil down the water with the figs and liquorice to one half, press and strain. Evaporate the strained liquor in a water bath till 24 fluid ounces remain, then adding 2 lbs. and a half of sugar make a syrup,—rub the pulps with this, and mix in the sifted powder.

a. Dried plaintains may be used instead, half a pound being employed. *b.* Instead of prunes, *Sebestens*, the ripe fruit of the *cordia myxa*. *c.* For liquorice, substitute the same quantity of *goonch*.

Medicinal Use.—Laxative; dose ʒii. to ʒiv.

DECOCTIONS.

Decocta.

DECOCTION in Pharmacy means a preparation in which the active parts of a substance are dissolved by boiling water.

If the activity of a remedy depends upon any volatile principle, decoction tends to dissipate this, and should not be resorted to.

Decoctions should be strained while hot; the deposit on cooling should not be separated.

When roots contain starch, *infusion* in hot water is usually preferred to decoction, as less of the starch is thus separated.

As watery solutions of vegetable matter spoil rapidly, they should be prepared only when required.

DECOCTION OF ALOES.

Extract of liquorice, *a.* seven drachms, carbonate of potash, one drachm, Socotorine aloes powdered, myrrh powdered, saffron, each a drachm and a half.

Compound tincture of cardamums seven fluid ounces, distilled water, a pint and a half.

Boil the liquorice, carbonate of potash, aloes, myrrh and saffron with the water to one pint measure, strain, and add the tincture.

The carbonate of potash is added to dissolve the resinous portion of the myrrh and aloes.

a. Extract of goonch (*Abrus precatorius*) may be used instead.

Use.—Gently cathartic and tonic, dose 30 grs. to ʒi.

DECOCTION OF BARLEY.

Decoctum Hordei.

Pearl barley, washed and dried, two ounces and a half, boil in half a pint of the water for two minutes and throw

this water away. Then boil in four pints of water, previously heated, boil down to two pints, strain.

Use.—Demulcent, in enemas.

Compound Decoction of Barley.

Decoction of barley, two pints, figs, *a.* sliced two ounces and a half, liquorice root, *b.* sliced and bruised five drachms, raisins stoned, two ounces and a half, water a pint, boil down to two pints, strain.

a. Stove-dried plaintains, and *b.* goonch root, may be used instead.

Use.—A good demulcent.

Decoction of Ceylon Moss.

Decoctum Lichenis Zeylanici.

Ceylon moss ground to fine powder two drachms, water one quart, boil for twenty minutes, strain through muslin.

Use.—Mucilaginous and demulcent. By increasing the proportion of the ground moss to half an ounce, the filtered solution on cooling becomes a firm jelly, which when flavoured by cinnamon or lemon peel, sugar and a little wine, is an excellent article of light food for sick children, and convalescents.

Decoction of Cinchona.

Cinchona bark bruised ten drachms, distilled water a pint. Boil for a quarter of an hour in an earthen vessel and strain while hot.

This decoction owes its virtues to its containing in solution the alkalies quinine and cinchonine, together with astringent matter, (tannic acid.) The existence of the last substance renders it necessary to boil the bark in an earthen vessel, iron vessels blackening the solution.

N. B.—It is seldom or never used, except as an astringent wash externally. Its properties as a febrifuge and tonic are similar, but far inferior, to those of the sulphate of quinine.

Decoction of Dulcamara.

Dulcamara ten drachms, water a pint and a half.

Mix and boil and evaporate to a pint, and strain.

The dulcamara contains an active narcotic alkali, *Solanine.*—This preparation is narcotic and diuretic; dose ʒiv. to f ʒi. thrice daily.

It is very desirable to ascertain whether the Indian species, solanum nigrum, *Arrub-ul-saleb*, possesses similar virtues. (*See Dispensatory, page* 462.)

Decoction of Gulancha.

Take of the stems of the gulancha two ounces, bruise in a mortar and boil with a pint of water for half an hour, strain the decoction, and boil down to four ounces.

Use.—A valuable bitter tonic and alterative. Dose one ounce flavoured with honey thrice daily. This preparation is the *Pachana* of the native physicians.

Decoction of Ispaghool.

Ispaghool seeds two drachms, distilled water one pint.

Boil and strain as directed under last head.

Both these preparations are simple demulcents. That of Isphaghool is used in dysenteries, and recommended by Mr. Twining.

Compound Decoction of Mallow.

Mallow, dried, *a.* an ounce, chamomile dried, half an ounce, water, a pint, boil and strain.

Use.—In enemas and fomentations.

a. The dried capsules of the okra, *Hibiscus esculentus*, may be substituted.

Decoction of Pomegranate Rind.

Decoctum Granati.

Pomegranate rind two ounces, distilled water a pint and a half, boil down to a pint, and strain.

Medicinal Use.—A strong astringent, used in chronic dysentery and tape worm; dose, ʒiv. to ℥i.

Decoction of Pomegranate Root Bark.

Decoctum Corticis Radicis Granati.

Pomegranate root bark two ounces, distilled water a pint and a half, boil to one pint, strain.

Medicinal Use.—Deemed specific in tape worm; dose ʒiv. to ℥i. thrice daily.

Decoction of Poppy Heads.

Decoctum Papaveris.

Poppy capsules sliced four ounces, water four pints, boil for fifteen minutes and strain.

Use.—A fomentation for painful bruises and swellings, blistered or burned surfaces, &c.

Decoction of Quince Seeds.

Decoctum Cydoniæ.

Quince seeds, *a.* two drachms, distilled water, one pint. Boil gently for ten minutes and afterwards strain.

a. The *bedana* of the bazar may be used instead.

Decoction of Rice.

Decoctum Oryzæ.

Rice one ounce, soft water a quart, boil and strain.

Medicinal Use.—Demulcent, and in enemas as a vehicle for active remedies.

Decoction of Rohun.

Take of Rohun bark ten drachms, water two pints.

Boil to one pint in a porcelain vessel, and strain. The solution should be of a reddish colour.

Medicinal Uses.—A valuable astringent wash, for gargles, vaginal injections, and enemas. We intend it as a substitute for the oak bark decoction of the London Pharmacopeia.

Decoction of Sarsaparilla.

Take of sarsaparilla root sliced five ounces, boiling distilled water four pints.

Macerate for four hours in a vessel lightly covered, at 100° Fahrt. Take out the sarsaparilla and bruise it, macerate again in the same liquor for two hours, then boil down to two pints, and strain.

The red sarsaparilla should be preferred.

Medicinal Uses.—Alterative and diuretic; dose ʒiv. to ʒviij. three or four times daily.

Compound Decoction of Sarsaparilla.

Decoction of Sarsaparilla (boiling) four pints, sassafras sliced, *a.* guaiacum wood shavings, liquorice bruised, each ten drachms. Mezereon bark, *b.* three drachms—boil for a quarter of an hour and strain.

Medicinal Uses.—Stimulant, diaphoretic and alterative, very much given in secondary syphilis and rheumatism; dose ʒiv. to ʒvi. thrice daily.

Remarks.—In both these processes when sarsaparilla is not obtainable, the China root, (*Smilax China,*) may be employed.

An infusion of the *Hemidesmus Indicus,* (Ununtamul,) prepared as afterwards directed, is a still better substitute for sarsaparilla. But as much of the virtues of the Ununtamul depend on a volatile

principle, it should not be used in decoction, as the long boiling dissipates the active ingredient.

a. For the *Mezereon* of the London Pharmacopeia, (Daphne mezereon) the dried bark of the Nepal paper plant, *Daphne cannabina*, may be substituted. The bazar *mezereon* is almost always inert from age.

b. The *Assam sassafras* is fully equal to the American kind, and may be introduced accordingly, although its source is as yet not perfectly ascertained.

Lastly, for liquorice, the *goonch* may be substituted in this as in many other preparations.

Decoction of Sapan.

Sapan wood in chips one ounce, water a pint, boil down to one half, and add, towards the end, cinnamon in powder one drachm.

This is introduced as a perfect indigenous substitute for the decoction of Hœmatoxylon of the Edinburgh Pharmacopeia.

Decoction of Senega.

Senega ten drachms, distilled water two pints, boil down to one half, and strain.

Uses.—A stimulant diaphoretic, also much used in typhoid pneumonia and bronchitis, and in chronic rheumatism; dose ʒi. to ʒiij. every second or third hour.

Decoction of Starch.

Decoctum Amyli.

Starch, *a.* four drachms, water a pint, rub together and boil.

a. Instead of European starch we recommend that Indian arrow root (*tikor*,) especially that of Calcutta and Benares be employed. European starch is often mixed with a portion of powdered blue glass, or cobalt.

Use.—Demulcent.

Decoction of Uva Ursi.

Uva Ursi leaves bruised, one ounce, distilled water a pint and a half, boil down to a pint and strain.

Use.—A useful bitter, having a special tendency to remedy purulent and mucous discharges from the kidnies and bladder; dose ʒj to ʒij, repeated according to the effect.

In our list of decoctions we have omitted the following, which occur in the London Pharmacopeia:—

1. Decoction of Iceland Moss.
2. ,, of Winter green or Pyrola.
3. ,, of Oak bark,
4. ,, of Broom, (Scoparia.)
5. ,, of Logwood, (Hœmatoxylon.)
6. ,, of Elm bark.
7. ,, of White Hellebore.

Substituting as follows:—

1. Decoction of Ceylon Moss.
3. Bark of Rohun.
5. ,, Sapan Wood.

[Nos. 1, 2, 5, 6 and 7 are rejected or omitted by the last Edinburgh Pharmacopeia. 4, we find is never prescribed or indented for from the Hon'ble Company's Dispensary.]

DISTILLED WATERS.

Distilled Water.

Aqua Destillata.

Take of water 10 gallons, distil, reject the first quart and retain the next eight gallons; it should be kept in stoppered bottles.

Nearly all river and spring waters contain impurities, organic and mineral, which render them unfit for the purposes of Pharmacy.

No water should be employed by the Apothecary which is rendered turbid (1) by nitrate of baryta; (2) nitrate of silver; (3) or oxalate of ammonia; or is altered in colour by solutions of (4) sulphuret of potash; (5) ferrocyanuret of potassium; 1 detects sulphuric acid, 3 lime, 2 chlorine, indicative of common salt, 4 lead or iron, 5 iron, by a blue—or copper by a brown precipitate.

A cubic inch of distilled water at 62° weighs 252 grains. A pint weighs 8,750 grs. or 20 ounces avoirdupois.

When distilled waters are prepared from dried vegetables, only half the material should be employed. The aroma of the distilled

water depends on its dissolving a portion of the volatile oil distilled at the same time.

Indeed watery solutions of volatile oils may be prepared extemporaneously by agitating these with water and filtering, but the flavor is not so good as when distillation is performed. A little spirit prevents the water from spoiling.

Dill Water.

Aqua Anethi.

Bruised dill seed one pound and a half, proof spirit seven fluid ounces, water two gallons, mix and distil one gallon.

Cherry Laurel Water.

Aqua Laurocerasi.

Take of cherry laurel leaves one pound, water two pints and a half, chop down the leaves, mix with the water, distil off one pint, agitate the distilled liquid well, filter if at all milky after settling; lastly add *compound spirit of lavender* one ounce.

Use.—This is a sedative narcotic of much power; dose ten to twenty drops. It contains hydrocyanic acid, and a poisonous volatile oil.

Caraway Water.

Aqua Carui.

Bruised caraway seeds one pound and half, water and spirit as in dill water.

Orange Flower Water.

Aqua Florum Aurantii.

Orange flowers ten pounds, water and spirit as above.

All these distilled waters, except the cherry laurel water, are merely intended as vehicles in draughts and mixtures for the administration of more active remedies.

In the same manner, prepare the distilled water of

Cassia bark. Fennel, (Panmori.)
Cinnamon bark. Peppermint.
Fennel, sweet.

N. B.—Dried leaf 2 lbs., or fresh leaf 4 lbs.

Spearmint.

Dried leaf 2 lbs., fresh leaf 4 lbs.

Pimento.

Bruised seed 1 lb.

Penny royal.

Dried leaf 2 lbs., or fresh leaf 4 lbs.

Rose water, petals of rosa centifolia 10lbs.

Rose petals are preserved for this purpose by being beaten well with twice their weight of common salt, and packed in jars; the calyces should be first separated.

Also the following waters using 2 lbs. of fresh or 4 lbs. dried leaves to two gallons of water; of the seeds, one pound.

		Native Names.
Ajwain water, ...	from seeds, ...	Ajouain.
Anise, ...	seeds, ...	Sonf.
Marjoram, ...	dried leaves, ...	Murwa.
Cajeput, ...	fresh leaves, ...	Kyapooti.
Celery, ...	seeds, ...	Hurufs.
Coriander, ...	seeds, ...	Duniya.
Indian dill, ...	seeds, ...	Soya.
Hemidesmus, ...	roots, 2 lbs.	Ununtamul.
Juniper, ...	berries, ...	Hoober.
Musk hibiscus, ...	seeds, ...	Hub-ul-musk.
Sandal, ...	wood, bruised 1 lb....	Sufed sandal.
Sassafras, Nipal,... ...	bark, 1 lb.	———
Tulsi, *white*,...	fresh leaves, ...	Sufed tulsi.
Tejpata, ...	leaves, ...	———

ENEMAS.

Cathartic Enema.

Take of olive oil, *a*, one ounce, sulphate of magnesia half an ounce, sugar one ounce, senna half an ounce, and boiling water sixteen fluid ounces.

Infuse the senna in the water for an hour, then dissolve the salt and sugar, add the oil and agitate all together.

a. Poppy seed, til seed or ground nut oil of good quality may be substituted for the olive oil.

Enema of Aloes.

Aloes (Soccotorine) two scruples, carbonate of potash fifteen grains.

a. Decoction of barley half a pint, mix and rub together.

a. Decoction of rice water may be used instead.

Used as a stimulant cathartic, especially in dislodging worms from the rectum, and in amennhorea.

Enema of Colocynth.

Compound extract of colocynth two scruples, soft soap an ounce, water a pint.

Use.—An active enema.

Fœtid Enema.

To the cathartic enema, add two drachms of tincture of assafœtida. Used chiefly in hysteric cases.

Opiate Enema.

Decoction of starch, *a.* four fluid ounces, tincture of opium thirty minims.

a. Thick rice water may be used instead.

The Edinburgh College use only half this quantity of water.

Use.—An excellent sedative and anodyne injection.

Tobacco Enema.

Tobacco a drachm, boiling water a pint, macerate for an hour and strain.

Use.—A drastic cathartic and narcotic, seldom used except in the treatment of strangulated hernia.

Turpentine Enema.

Enema Terebinthinæ.

Oil of turpentine a fluid ounce, yelk of egg one, decoction of barley or rice nineteen fluid ounces.

Use.—A powerful cathartic and stimulant, much used in apoplexy, tape worm, and obstinate constipation.

EXTRACTS.

Extracts consist of the principles soluble in water, rectified, or proof spirit, dissolved from vegetable substances, and evaporated either to dryness, or to a soft semi-solid mass.

The prolonged application of heat either volatilizes, alters or destroys many active vegetable principles. We should avoid using it therefore beyond the degree or period absolutely necessary for the solution of these principles, and the subsequent dissipation of the solvent.

As evaporation takes place in vacuô with great rapidity at very low temperatures, by removing atmospheric pressure from the vessels employed, much finer extracts can be obtained than by the common process.

For ordinary pharmaceutical apparatus, the water bath is used.

A vessel with boiling water is placed under the capsule containing the fluid to be evaporated, and heat is applied. The temperature of the evaporating liquid will seldom rise beyond 180°.

Solar evaporation may be practised with great success in India, if proper means be taken to keep off the dust. Mr. Ludlow's extract of hyosciamus prepared in this manner from the expressed juice of the plant, is an excellent instance of what may be done in this way.

In making the preparatory solution, maceration, infusion or boiling in water and spirit may be severally necessary. This is specified in each particular case. The method of solution by percolation and displacement, recently introduced by the French chemists, is thus performed.

Take a cylinder of tinned iron or an earthen vessel two feet high, and from two to four inches in diameter, provided with a bottom and a stop-cock, or simply a tube closed by a peg. Into this

cylinder is firmly packed a paste made of the substance, previously powdered with the solvent required; a piece of calico is tied round the tube after the peg is withdrawn, and as much of the solvent poured over the paste as is equal to the volume this occupies in the cylinder. A highly concentrated solution is thus obtained; when as much fluid percolates as has been added, repeat this with a fresh quantity of the solvent, and thus nearly the whole of the soluble matter will be removed by percolation. To displace a valuable solvent, such as alcohol, water is sometimes poured on, by which the first fluid employed is displaced without admixture with the second.

By this simple but most convenient process, time, spirit and fuel are in many instances greatly economized, and a far superior volume obtained. It is applicable to most powders of barks and woods, and leaves. Many bruised seeds and concrete juices, however, cannot be thus treated, as channels form through the mass by which the solvent escapes without coming in contact with its separate particles.

Extract of Aconite.

Take of aconite root, (sungeea bish,) beaten to a coarse powder 1 lb., make it into a paste with the necessary quantity of rectified spirit, and percolate so long as the spirit is much coloured, distil off the spirit one-fourth, evaporate the rest on the water bath to the consistence of soft extract.

Use.—One-tenth to quarter of a grain in pills, with crumb of bread, thrice daily in chronic rheumatism, neuralgia, and tic-doloroux. It is a dangerous internal remedy, and not so manageable as the tincture. Externally one drachm of the extract is used in an ointment with an ounce of lard as an application in tic doloroux, sciatica, &c.

Remarks.—Our article is a substitute for the London and Edinburgh extracts, which are preparations from the expressed juice of the leaves of the *aconitum napellus*.

Extract of Aloes.

Soccotorine aloes fifteen ounces, boiling water a gallon, boil and strain, evaporate to a pillular consistence.

The resin is thus separated, and the extract is less irritating, and more active as a purgative than the crude *drug*. The Deckan *mushabhir* may be much improved by this process, but it never can be substituted adequately for the Bombay article.

Dose.—Five to fifteen grs.

Extract of Barberry Bark.

Prepare as extract of cinchona.

This extract is of brown-yellow colour, totally soluble in water, blackens by exposure to the air, is very bitter, solution bright yellow. It is identical with the best kinds of *rusot* or Indian *lycium*.

A valuable tonic, aperient and febrifuge in doses of 20 to 30 grains thrice daily. An excellent remedy in mild intermittent fevers.

Extract of Belladonna.

Bruise the fresh belladonna plant in a marble or stone mortar, express the juice, moisten the residuum, and express again, evaporate to the consistence of firm extract.

This extract owes its powers to the presence of the highly narcotic alkali called *Atropia*. Its most characteristic and useful effect is occasioning great dilatation of the pupil of the eye. Atropia and its salts are very difficultly prepared, and are so volatile as to be very dangerous in manipulation.

The softened extract of belladonna is rubbed over the eye-brow or eye-lids to cause the dilatation of the pupil, in iritis, and previous to some surgical operations on the eye. It has been said on insufficient grounds, to be a prophylactic against scarlatina.

The extract of stramonium when carefully prepared, and the salts of daturia, which are readily obtained from the stramonium of Bengal, afford an admirable substitute for this article. The substitute is the more valuable as the *Atropa belladonna* does not occur in India, and is not likely to be successfully cultivated.

Extract of Chamomile.

Extractum Anthemidis.

Chamomile flowers 1 lb., boil in a gallon of water to four pints, filter while hot, and evaporate nearly to dryness.

The *baboone phul* of the bazars may be used instead.

Use.—Tonic and slightly narcotic. Dose five to ten grs.

Extract of Cinchona.

Cinchona bark in fine powder four ounces, proof spirit twenty-four fluid ounces.

Percolate with the spirit, distil off three-fourths of the spirit, and evaporate the remaining part to the consistence of extract.

Use.—Tonic and febrifuge. Dose ten grains to thirty grains.

Acetic Extract of Colchicum.

Extractum Colchici Acetosum.

Fresh colchicum, (bulb) a pound, acetic acid three fluid ounces, bruise the bulb sprinkled with the acid, and evaporate in a porcelain vessel.

The acetic acid renders the active principles of the bulb more soluble in water. A valuable remedy in gout and rheumatism. Dose one grain to two grains, thrice daily.

Practitioners are recommended to try the above formula with the *soorinjan tulk*, or hermodactyl colchicum, which is reputed to be of similar medicinal virtue.

Extract of Colocynth.

Dehli colocynth one pound, water two gallons, boil quickly for six hours, keeping up the original quantity of water. Strain while hot, and evaporate to the consistence required.

Use.—Purgative. Dose five to fifteen grains.

Compound Extract of Colocynth.

Take of Dehli colocynth (*indrayun*) sliced, six ounces, Soccotorine aloes twelve ounces, powdered scammony four ounces, powdered cardamoms one ounce, soap three ounces; macerate the colocynth in one gallon of proof spirit for two days, strain, (by percolation, a tincture of equal strength and quan-

tity is procurable in an hour.) To the tincture add the aloes, scammony and soap, evaporate and mix the cardamoms towards the end.

Use.—This is an admirable cathartic, more prescribed in India perhaps than any other purgative preparation. It is still imported from England at £1 1*s* the pound, although all the ingredients are to be had in the bazars, of excellent quality. The preparation can be made thus at less than one-third of the cost of the imported article.

Extract of Digitalis.

Prepared as directed under the head of Hemlock.

Use.—A narcotic sedative of great power, supposed to contain an alkali called *digitalia.* When properly prepared, the extract of digitalis if given in doses of quarter a grain to half a grain every two hours, has the property of singularly diminishing the strength and rapidity of the heart's action. The effect is sometimes latent or accumulates in the system, being suddenly shewn in terrible and occasionally fatal collapse. A sudden change of posture while a patient is under the action of this remedy, sometimes induces similar symptoms. Digitalis is also a powerful diuretic in every form.

This extract is chiefly used with squill and blue pill in the treatment of hypertrophy of the heart, aneurism of the larger arteries, in dropsies, and ardent inflammatory diseases. Its use demands the utmost caution.

Extract of Elaterium.

Slice the momordica elaterium, and gently express the juice through a fine sieve. Allow the thick part to subside from the liquid, and collect and dry the deposit.

Of greenish colour, and bitter taste, boiled in alcohol it deposits, on cooling, crystals of *elatin* in the proportion of about 10 per 100. According to the experiments of Drs. Morries and Christison, this is the active principle of the drug.

Elaterium is a drastic cathartic in doses of from 1-8th grain to 2 grains. Elatin is at least three times more powerful. The chief utility of this substance is its enabling us to administer a powerful cathartic in extremely small bulk.

Extract of Gab.

Extractum Diospyri.

Take of gab fruit any convenient number, crush and express the juice, strain and immediately evaporate on the water bath to a perfectly dry mass, (to be preserved in stoppered bottles.)

The gab fruit contains, when ripe, a great quantity of mucilage and tannic acid. The extract is reddish-brown, in flexible plates, and if properly prepared, soluble in water. It is an excellent astringent, and very useful in diarrhœa and chronic dysentery.

Dose.—One to five grains thrice daily. A solution of ʒij. in a pint of water is a valuable vaginal injection in leucorrhea.

Extract of Gentian.

Gentian two lbs. and a half, boiling distilled water two gallons, macerate for 24 hours, boil, strain and evaporate to dryness.

A far superior process is that by *percolation.* The powdered gentian is subjected to the action of half its weight of distilled water at the common temperature for twelve hours, then acted on by water in the percolator until exhausted, and the solution evaporated nearly to dryness.

The Extracts of Chiretta and Justicia, *(Kreat,)*

Are to be prepared by either of these processes.

These three extracts agree in being valuable bitter tonics. The chiretta extract deserves the preference. Both this and gentian contain a peculiar principle termed the gentisic acid.

Dose.—Ten to thirty grains twice or three times daily, usually prescribed with sarsaparilla, hemidesmus or iron.

Extract of Gulancha.

Take of the stems of the gulancha any quantity, clean well and bruise in a stone mortar, then steep in water for twenty-four hours. Squeeze the mass in a wooden press, and strain

the fluid through calico; evaporate the solution to dryness on earthenware vessels by the heat of the sun.

Use.—A very valuable bitter tonic; the preparation we give is the *Palo* of the native physicians. Dose, one drachm and a half to three drachms, in divided portions daily, diffused through milk, and the taste disguised by sugar.

Extract of Hemlock.

Extr. Conii.

Hemlock leaves a pound, bruise, sprinkle with water in a stone mortar, press out the juice, evaporate to a due consistence.

Use.—This extract owes its virtues to the presence of the alkali *conia*. This is a volatile fluid, and of powerful narcotic and anti-convulsive properties. The extract unless prepared in vacuô or in the very recent state is nearly inert. When good and fresh, it is a servicable anodyne, given in five grain doses twice or three times daily. Its chief use is as a local application when mixed with simple ointment in the treatment of painful piles, and in certain forms of stricture or cancer of the rectum.

Extract of Hemp.

Extr. Cannabis.

Gunja tops one lb., strong spirit one gallon, macerate for two days, boil for half an hour and strain, distil off three-fourths of the spirit, and with this repeat the maceration and distillation, repeat this again. Evaporate all the liquors to the consistence of soft pillular extract.

Use.—A powerful, but safe narcotic, in large doses producing cataleptic rigidity of the muscles; chiefly used in cholera, delirium tremens and tetanus, also given as a palliative in hydrophobia. Dose half a grain to ten grains, repeated according to the symptoms and effects.

Extract of Hop.

Extractum Lupuli.

Prepared from the hop flowers as the extract of sapan wood.

Use.—A gentle anodyne and excellent bitter tonic. Dose as an anodyne, five to ten grains; as a tonic, one or two grains thrice daily.

Extract of Hyosciamus.

Take of the recent plant any quantity, moisten with water, beat in a stone mortar, press, and evaporate the juice without straining to a proper consistence.

The evaporation may be advantageously conducted by exposure to the sun of the juice spread in thin layers on common earthen vessels. This plan was practised with great success by Mr. Ludlow, late of the Bengal Medical Establishment.

This extract contains *Hyosciamine*, an alkaline base of highly narcotic properties. The extract in two to five grain doses is a valuable anodyne and sedative, less stimulating than opium, and devoid of any constipating tendency. It is frequently substituted for opium where excitement or constipation must be avoided. Mr. Ludlow's extract prepared by solar evaporation we found to be a very superior preparation to that made by the London process.

Extract of Jalap.

Jalap root powdered, any convenient quantity. Moisten it with rectified spirit, exhaust the powder by percolation, distil off three-fourths of the spirit, evaporate the rest on a water bath to a soft pillular consistence.

This is a much better process than the London one.

The extract of jalap consists chiefly of resin. It concentrates the properties of the root, and in doses of five to ten grains, is one of the best purgatives we possess.

Extract of Kaladana.

Treat the powdered seeds of the kaladana exactly as above described.

The extract is soft, yellowish brown, of slightly acrid taste, insoluble in water, soluble in spirit and the oils. In contains resin and fixed oil.

This extract was introduced into practice by the Editor of this work. It has been extensively tried, and most favorably reported on. In doses of from five to ten grains it proves a quick cathartic, and seldom occasions either griping or vomiting.

Extract of Liquorice.

Extractum Glycyrrhizæ.

Liquorice root two lbs. and a half, boiling distilled water two gallons, macerate for 24 hours, boil down to one-half, strain and evaporate to a soft mass on the water bath.

Or the liquorice root in powder may be acted upon by percolation, which will afford a better article.

In this manner prepare the,

Extract of Goonch.

Extractum Abri.

Both these extracts agree in their general and medicinal properties, being merely sweet demulcents, and sometimes added to other articles to modify or conceal their flavour. The extract when hardened is often eaten in small quantities as a local demulcent in cough, dependent on irritation in the pharynx, or at the top of the trachea.

Extract of Nux Vomica.

Powder the seeds as described under the head of strychnine, subject the powder to percolation with spirit till the solution is free from bitterness. Recover three-fourths of the spirit by distillation. Concentrate the rest to dryness on the water bath.

Use.—An admirable convulsive tonic, (see Strychnine.) *Dose*, 1-8th to 1-4th of a grain thrice daily, in pills with crumb of bread.

Extract of Opium.

Opium one pound, water a gallon.

First soften the opium in a small portion of water, break it down to a pulp, express, and repeat this with all the water

in successive portions. Evaporate on the water bath to one-third. Decant this from the sediment which has subsided, and which is usually of a black colour; complete the evaporation to a soft mass. The black powder is to be preserved.*

This is a very good preparation, containing all the sedative parts of the drug, the insoluble matter being left on the filter. *Dose*, one to five grains.

Extract of Pareira.

Prepared as the extract of liquorice.

Extract of Nemooka.

Prepared as the extract of Pareira.

The extract of *Pareira* is a valuable astringent diuretic in doses of twenty grains dissolved in water thrice daily. The extract of *nemooka* affords a good substitute for this useful article.

Extract of Poppy.

Extractum Papaveris.

Poppy heads fifteen ounces, boiling water one gallon, macerate for a day, boil to four pints, strain, evaporate to a soft mass.

This extract is of very questionable utility, and quite inert if the capsules have been previously subjected to incision for the removal of the opium they afford.

Dose.—Nine grains to twenty grains in pills.

Extract of Quassia.

Prepared as extract of liquorice.

A valuable bitter tonic. *Dose*, five grains to ten grains thrice daily.

* The black powder contains about forty per hundred of anarcotine, which it yields in fine crystals, by solution in boiling alcohol, and filtering while hot.

Extract of Rhubarb.

Extractum Rhei.

Rhubarb root one pound, water five pints.

Cut the rhubarb into very small pieces, macerate with half the water for a day, press, repeat this; filter the liquors, and evaporate in a water bath, or if practicable, in vacuô.

The London College direct it to be made with one part spirit and 7 of water, but the Edinburgh method, above quoted, affords a finer and more active extract.

Use.—Purgative, dose ten to twenty grains dissolved in water.

We have received from Dr. Falconer a fine specimen of extract of rhubarb prepared by the hill people in the Himalayas, and designated *Osareh rewund.* Their method of preparing it has not been described.

Extract of Sapan Wood.

Sapan wood in chips one pound, boiling water a gallon, boil to four pints, strain and concentrate.

A useful astringent, (containing much gallic and tannic acid,) and a good substitute for the logwood of the British Pharmacopeiæ.

Dose.—Five to ten grains twice or thrice daily in chronic dysenteries chiefly. It is seldom given alone, but usually with quinine, gentian or chiretta. It should not be given with the preparations of iron.

Fluid Extract of Sarsaparilla.

Sarsaparilla one pound, boiling water six pints.

Digest for two hours in four pints of water, take out the root, bruise it and replace it in the water; boil for two hours, strain and press, boil what is left in two pints of water and heat as before; unite the liquors, evaporate to thin syrup, and add after cooling as much spirit as will make the whole sixteen fluid ounces.

See *decoction of sarsaparilla* for the uses of this article.

Extract of Scammony.

Boil powdered scammony in rectified spirit till nothing further is dissolved, filter, recover four-fifths of the spirit

by distillation, pour water on the residue and strain, wash the deposit with water, and dry on the water bath.

The object of this preparation is to purify the scammony of commerce from the adulterations to which it is commonly subjected, and which we have alluded to in our materia medica notes.

Use.—Cathartic, dose five grains. It is not used by itself, being usually combined with cream of tartar, jalap, ginger, aloes, &c.

Extract of Stramonium.

Take of seeds of Datura as much as convenient. Grind in a coffee mill; make into a paste with proof spirit, and percolate. Distil off the spirit, and evaporate on a water bath to dryness.

Use.—An excellent substitute for extract of belladonna, *(see that head.)* Internally it is sometimes given in asthma and other spasmodic diseases in doses of half a grain to one and a half grain thrice daily. The effect is purely, but powerfully narcotic.

Extract of Taraxacum.

Taraxacum root fresh and bruised, two and a half lbs., boiling water two gallons.

Prepare as extract of gentian.

Use.—A good tonic and diuretic. Dose five to ten grains thrice daily.

Extract of Uva Ursi.

Uva ursi two and a half lbs., boiling water two gallons, macerate for a day, boil to a gallon, strain while hot, evaporate nearly to dryness.

Use.—The same as that of the extracts of Pareira and Neemooka.

PREPARATIONS OF HONEY.

Honey of Borax.

Mel. Boracis.

Borax one drachm, honey one ounce, mix.

Use.—A good application in apthous affections of the mouth.

Honey of Roses.

Red rose petals dried four ounces, boiling water two pints and a half, honey five pounds.

Infuse the petals in the water for six hours, strain, and add the honey and boil down to the consistence of a syrup.

Use.—In gargles and washes for the throat.

Oxymel.

Honey ten pounds, acetic acid a pint and a half; heat the honey and mix with the acid.

Use.—In gargles and washes.

Oxymel of Squills.

Honey three pounds, vinegar of squill a pint and a half; boil down on a porcelain capsule to the consistence of syrup.

Use.—In chronic coughs and the catarrhal affections of old persons. *Dose*, half a drachm to two drachms. Emetic in doses of one to two ounces.

INFUSIONS.

Infusion in Pharmacy means a solution of any vegetable remedy in water, prepared at a temperature below that of boiling. As prolonged boiling destroys or changes some active vegetable principles and expels volatile oils and acids, the form of infusion is in many instances preferable to that

of decoction. Infusion may be made either with hot or cold water, as directed in each case. Distilled or rain water should invariably be used.

As infusions very readily spoil, they should be prepared only as required.

Infusion of Ayapana.

Recently dried leaves of ayapana two ounces, water, boiling, one pint, allow the mixture to stand and settle, then strain.

Use.—A very agreeable diaphoretic and mild tonic. *Dose,* two fluid ounces thrice daily. The ayapana is a favorite remedy among the native Practitioners.

Infusion of Bel.

Fresh or recently dried bel leaf (*Cratæva*) two ounces, distilled water, boiling, one pint; prepare as above described.

Use.—Slightly bitter and aromatic; much used by the natives of Bengal. *Dose,* two to four ounces thrice daily.

Infusion of Buchu, (or Uva Ursi.)

Buchu leaf one ounce, boiling water one pint, infuse for two hours, strain through calico.

Use.—Slightly astringent, and especially useful in purulent and catarrhal discharges from the urinary organs. *Dose,* two to four ounces thrice daily.

Infusion of Calumba.

Calumba in coarse powder five drachms, boiling water a pint; infuse for two hours and strain.

Use.—A very useful tonic. *Dose,* two ounces thrice daily.

Infusion of Chamomile.

Infusum Anthemidis.

Chamomile flowers five drachms, boiling water one pint; infuse for a quarter of an hour and strain.

Use.—A bitter and aromatic tonic. *Dose*, one to two ounces. It is chiefly employed to promote the action of emetics; a small cupfull being taken warm soon after the emetic has been administered.

Infusion of Cascarilla.

Cascarilla bruised two ounces, boiling water a pint; infuse for two hours and strain.

Use.—A very agreeable tonic. *Dose*, one to two ounces thrice daily.

Infusion of Catechu.

Catechu powdered six drachms, cinnamon powdered one drachm, syrup three fluid ounces, boiling water seventeen fluid ounces; infuse the powders in the water for two hours, strain and add the syrup.

Use.—An efficacious astringent in relaxation of the bowels. *Dose*, one to three ounces thrice daily.

Infusion of Cinchona.

Cinchona bark powdered one ounce, boiling water a pint; infuse for two hours, and strain.

Use.—Tonic and febrifuge. *Dose*, one to two ounces thrice daily.

Infusion of Chiretta.

Chiretta half an ounce, boiling water one pint; infuse for two hours, and strain.

Use.—An excellent bitter tonic. *Dose*, one to three ounces thrice daily.

Infusion of Cloves.

Infusum Caryophylli.

Bruised cloves three drachms, boiling water a pint; infuse for two hours in a covered vessel, strain.

Use.—Aromatic and stimulant. *Dose*, one to two ounces; a very useful adjunct to some purgative mixtures which are apt to cause griping.

Infusion of Cusparia.

Cusparia bark powdered five drachms, distilled water, boiling, one pint, infuse for two hours, strain.

Use.—A febrifuge bitter tonic. *Dose*, one to two ounces thrice daily.

Infusion of Digitalis.

Digitalis leaves dried one drachm, spirit of cinnamon one fluid ounce, boiling water a pint; infuse the dried leaf in the water for four hours, strain, and add the spirit of cinnamon.

Use.—Powerfully narcotic and diuretic. *Dose*, half an ounce to one ounce thrice daily. It should be prescribed unmixed with other substances, as it is very readily decomposed. Its operation must be carefully watched, as it is apt to occasion sudden and dangerous collapse.

Infusion of Ergot.

Ergot of rye, bruised, one scruple, boiling water three ounces, infuse for half an hour, strain, and sweeten slightly with sugar.

Use.—In protracted delivery arising from debility of the uterus, also in uterine hæmorrhage. The dose may be repeated twice or three times at intervals of fifteen to twenty minutes. Great caution must be observed in its employment, for should there exist any mechanical impediment to delivery, the uterine contractions this remedy occasions, may cause the laceration of the womb.

Infusion of Gentian.

Gentian sliced half an ounce, orange peel dried one drachm, coriander seed bruised one drachm, proof spirit four fluid ounces, distilled water (cold) sixteen fluid ounces. Pour the spirit upon the solids in a covered vessel. After two hours add the water, and in six hours strain.

Use.—A valuable bitter tonic. *Dose*, one to two ounces thrice daily. It cannot be prescribed with the preparations of iron, lead, or of many other metals.

Infusion of Gulancha.

Gulancha stems sliced two ounces, cold water two pints, bruise the gulancha with a small portion of the water, when softened add the rest, and allow the whole to remain for six hours, being frequently shaken, strain.

Use.—An excellent alterative, tonic and diuretic. It is especially valuable in convalescence from fevers, and in secondary venereal affections. *Dose*, two to four ounces thrice daily.

Infusion of Hemidesmus, (*Ununtamul.*)

Hemidesmus bruised four ounces, boiling water two pints, infuse for two hours, strain.

Use.—A fragrant and highly effectual alterative and diuretic, of great service in secondary venereal affections and chronic rheumatism. It is in every respect a perfect substitute for sarsaparilla. *Dose*, two to four ounces thrice daily. It may be advantageously given in combination with the infusion or decoction of gulancha.

Infusion of Kanoor.

Infusum Crini.

Recent root or stems of the kanoor four drachms, cold water two ounces; bruise the root into a pulp in a stone or Wedgewood mortar, adding the water by degrees, press through calico.

Use.—This preparation is a mild and certain emetic. In doses of two drachms, given every twenty minutes, this solution occasions nausea and perspiration. It does not cause griping, purging, or any other distressing symptoms. The use of the kanoor was pointed out by the Editor in 1839. *(See Bengal Dispensatory, p. 657.)*

Infusion of Kreat.

Infusum Justiciæ.

Kreat root bruised, one ounce, orange peel dried and bruised one drachm, coriander bruised one drachm, proof

spirit four fluid ounces, cold water sixteen fluid ounces; prepare as directed under the head of extract of gentian.

Use.—An excellent bitter tonic. *Dose*, one to two ounces thrice daily.

Infusion of Kurroo.

Kurroo root, orange peel, coriander, proof spirit and water in the proportions above directed, and prepared in the same manner.

Use.—A perfect substitute for the corresponding preparation of gentian.—The kurroo (*Gentiana Kurroo*) is common in the Himalayas, and is much used in native practice.

Infusion of Linseed.

Linseed six drachms, liquorice root (*a*) bruised two drachms, boiling water one pint, infuse for four hours and strain.

a —Goonch root may be used instead.
Use.—Demulcent in gonorrhea.

Infusion of Neemoka.

Neemooka root two ounces, boiling water one pint, infuse for two hours and strain.

Use, and *dose* the same as of the infusion of Pareira,—for which the Neemooka is an efficient substitute.

Infusion of Orange Peel.

Infusum Aurantii.

Orange peel dried half an ounce, lemon peel fresh two drachms, cloves bruised one drachm, distilled water (boiling) one pint, infuse for a quarter of an hour and strain.

Use.—Cordial. *Dose*, one to two ounces.

Infusion of Pareira.

Pareira root six drachms, boiling water a pint, infuse for two hours, and strain.

Use.—In ardor of urine and irritation of the bladder. *Dose*, two to four ounces thrice daily.

Infusion of Quassia.

Quassia in chips one drachm, boiling water one pint, infuse for two hours and strain.

Use.—A bitter tonic, not astringent; it may be prescribed with the preparations of iron. *Dose*, one to two ounces.

Infusion of Rhubarb.

Infusum Rhei.

Rhubarb powdered one ounce, spirit of cinnamon two fluid ounces, boiling water eighteen fluid ounces; infuse the rhubarb for twelve hours in a covered vessel, add the spirit and strain.

Use.—Stomachic and tonic. *Dsee*, one to two ounces.

Infusion of Roses.

Dried rose petals three drachms, dilute sulphuric acid one fluid drachm and a half, white sugar six drachms, boiling water one pint; infuse the petals for one hour in the water in a glass or porcelain vessel, covered, then add the acid, strain through calico, and lastly add the sugar.

Use.—Astringent and tonic. *Dose*, one ounce to two ounces. Alkalis and earthy salts, as well as those of iron and lead, should not be prescribed with this preparation.

Infusion of Senna.

Senna an ounce and a half, ginger bruised, four scruples, boiling water a pint; infuse for an hour and strain.

Use.—Purgative. *Dose*, three to four ounces.

Infusion of Pata.

Infusum Sidæ.

Pata root sliced and bruised two ounces, ginger bruised two drachms, boiling water one pint; infuse for two hours and strain.

Use.—A very useful bitter tonic and astringent. *Dose*, one to two ounces three times daily. It should not be given with iron in any form.

Infusion of Pedalium.—(*Gokeroo.*)

Fresh leaves of pedalium two ounces, cold water a pint; allow the mixture to stand for two hours; strain and sweeten with sugar.

Use.—A good mucilaginous demulcent, much used by the natives as a drink in gonorrhea.

Infusion of Serpentaria.

Serpentaria half an ounce, boiling water a pint; infuse for three hours in a covered vessel, and strain.

Use.—Tonic, and diaphoretic. *Dose*, one to two ounces three times a day.

Infusion of Simarouba.

Simarouba bruised three drachms, boiling water a pint; infuse for two hours, and strain.

Use.—Tonic, astringent, and mucilaginous; should not be prescribed with alkaline or earthy salts, or those of lead or iron. *Dose*, one to two ounces three times a day.

Compound Infusion of Sohunjuna.

Sohunjuna root bruised, mustard seed bruised, each one ounce, compound spirit of sohunjuna a fluid ounce, distilled water, boiling, one pint, infuse the root and seed in the water for two hours in a covered vessel, strain and add the compound spirit.

This preparation represents the compound infusion of *Horse Radish* of the London Pharmacopeia. The root of the Moringa pterygosperma, *Sohunjuna* of Bengal, is a perfect substitute in flavour and properties for the European article.

Use.—A valuable stimulant. *Dose*, one to two ounces.

Infusion of Valerian.

Valerian root, (*a.*) half an ounce, distilled water boiling, a pint; infuse for half an hour in a covered vessel and strain.

(*a.*) The jatamansi valerian of the Himalayas, (*Balchur*, Hind.) is an efficient substitute for this article.

Use.—A very useful stimulant and antispasmodic remedy, chiefly employed in hysteric cases. *Dose*, one to two ounces three times daily.

Infusion of Violet, (*Banopsha.*)

Dried violet plant two drachms, boiling water a pint, infuse for twenty minutes.

The "Banopsha" of the bazars is the dried plant of the *Viola odorata*. The infusion is a good nauseant and diaphoretic.

METALLIC PREPARATIONS.

ALUMINIUM.

(*Compounds of*)

The metal Aluminium is not found in nature in the simple state, but combined with oxygen it forms the basis of all clays, and enters into the composition of a vast number of minerals and ores. Its oxide is called *alumina*. This unites with acids forming salts, of which the *sulphate* is a common natural production, of which the *salajit of* Behar and Nipal is an example. The metal aluminium is often naturally associated with sulphur and iron.

Metallic aluminium can only be prepared in very minute quanties, by decomposing its chloride by metallic potassium.

It is obtained in scales of steel grey colour. It decomposes water slowly at a boiling heat, and is dissolved by diluted acids and alkalies, hydrogen gas being evolved. Its symbol is Al. its eq. 171.2 on the oxygen, 13.7 on the hydrogen scale.

Alumina or the sesqui-oxide of aluminium, is the chief ingredient of all earths. It may be obtained by adding carbonate of potash to a solution of alum, (the *phitkari* of the bazars,) filtering and drying the precipitate. This oxide is white, infusible, soluble in acids and alkaline solutions before ignition, not afterwards. It has a strong disposition to unite with organic matter. Thus when cotton cloth is steeped in a solution of acetate of alumina, the alumina is deposited on the cotton, leaving the acid free.

Alumina also combines with coloring matters, and thus forms the basis of several valuable dyes. The composition of this oxide is thus expressed:—

	Oxygen scale.		Hydrogen scale.	
Alumina, 2 eqs.	342.4	= 642.4	Al. .. 27.4	= 51.4
Oxygen, 3 eqs.	300.0		Ox... 24.0	

Dried Alum.

Alumen Exsiccatum.

Liquify alum (*phitkari*) in an earthen vessel over the fire till it ceases to effervesce or emit fumes, then powder.

Remarks.—*Alum* occurs in commerce in large crystalline masses, the usual form of the individual crystals being eight-sided double pyramids. It is soluble in 18 parts of water at 60°, and three-fourths its weight at 212°; the solution is slightly acid, and of sweetish, astringent taste.

The *salajit* of Nipal is a mixture of sulphuret of aluminium, sulphate of alumina and sulphate of iron; its composition is very uncertain.

Alum is composed of

One eq. sulphate of potash, ...	= 88
Three eq. sulphate of alumina, ...	58× 3=174
Twenty-five eq. water, ...	9×25=225
Equiv. of alum, ..	487

In the process above described, the salt melts in its own water of crystallization, which is driven off by a continuance of the heat.

Use.—A powerful astringent in hæmorrhages, diarrhœa and mucous discharges.—It is much used in gargles and eye-washes. *Dose,* when given internally ten to twenty grains—it cannot be pre-

scribed with alkalies, their carbonates, lime or magnesia, the acetate of lead and many other remedies, as these effect its decomposition.

Compound Solution of Alum.

Alum, sulphate of zinc, each one ounce, boiling water three pints, dissolve together and strain.

Use.—A very powerful styptic and astringent.

ANTIMONY.

(Preparations of)

Antimony is a very abundant metal, not found uncombined, but usually in the state of sulphuret or oxide, and of these united as the oxy-sulphuret. The sulphuret of antimony (*surmeh,*) is the most abundant ore, existing in immense quantities in the Malayan Archipelago and Eastern Islands, and being largely exported from Singapore.

Native sulphuret of antimony (*surmeh*) is dark grey, of metallic lustre, usually striated in structure, easily powdered. In the bazars we have found the following substances sold by the native dealers as this ore: 1, sulphuret of lead; 2, sulphuret of molybdenum; 3, fused sulphuret of lead with arsenic and antimony; 4, grey manganese ore.

These may be distinguished thus:—

By the blow pipe on charcoal, by which

1. Gives concentric rings of red and yellow oxide on the charcoal, and to the inner flame, a globule of soft metal.
2. Is totally unaffected.
3. Fuses, emits fumes of a garlic odour, and leaves a red and yellow ash.
4. Is little affected with borax, gives a glass of splendid red colour *while cooling*, nearly black when cold.

In distinction to these, the genuine ore emits copious white fumes, leaves a pure white oxide on the charcoal, and gives with difficulty a brittle metallic globule.

These substances may be distinguished also by the colour of the powder, if rubbed in a Wedgewood or porcelain mortar.

1. Crystalline greyish black.
2. Unctuous black brilliant flakes.
3. Brick red powder.
4. Brownish powder.

The powder of the true ore of Antimony is a dull black.

They may also be recognized by muriatic acid.

1. Dissolves easily, solution not precipitated by distilled water, liquid blackened by hydrosulphuret of ammonia.

2. Unaffected.

3. Partially dissolved, a red powder (realgar) subsiding, solution partially precipitated by water, solution blackened by hydrosulphuret of ammonia.

4. Partially dissolved; hydrosulphuret of ammonia gives a yellowish brown precipitate to the solution which is not precipitated by water.

In muriatic acid the genuine ore is freely dissolved, the solution gives a perfectly white and very copious precipitate to distilled water. The washed precipitate is turned orange red by the contact of hydrosulphuret of ammonia.

Lastly, pure sulphuret of antimony is soluble in a hot solution of caustic potash, by which 1, 2 and 4 are undissolved, and an orange brown precipitate subsides on cooling.

The great importance of this ore as the basis of the antimonial preparations, renders close attention to these tests absolutely necessary.

From this sulphuret, metallic antimony may be best obtained by melting it at a bright red heat, with twice its weight of *black flux*. This is a mixture of carbon and carbonate of potash prepared by deflagrating equal parts of cream of tartar and saltpetre. Sulphuret of potassium and oxide of antimony are first formed, the carbon decomposes the oxide, and metallic antimony separates.

Metallic antimony is brilliant, white, brittle, crystalline, sp. gr. 6.8, melts at 800°, and burns, if violently heated, with a splendid white flame and copious fumes; if pure, it is not acted upon by air or water, sulphuric or muriatic acids, but it is rapidly oxydized by the nitric acid.

	Oxygen scale.	Hydrogen scale.
Equivalent,	161.3	129.

Antimony has three oxides; viz. the sesqui-oxide, and the antimonious and antimonic acids; the first being the basis of all the really useful medicinal compounds of this metal.

Oxide of Antimony.

(*Antimonii Oxydum.*)

Sulphuret of antimony in fine powder four ounces, muriatic acid one pint.

Dissolve by a gentle heat, boil for half an hour, filter, and pour the liquid into three parts of water. A copious preci-

pitate subsides, filter through calico, and wash with cold water containing a little carbonate of soda, till the washings cease to redden litmus paper. Dry the powder on the water bath.

In this process the following decomposition occurs :—

Sulphuret of Antimony.	*Muriatic Acid.*
Sulphur,*	*Hydrogen.
Antimony,†	†Chlorine.

* * Form sulphuretted hydrogen which escapes, and † † chloride of antimony which is dissolved.

Some uncombined sulphur in the solid state is liberated also in yellow globules. It is to separate these that the first filtration is directed.

On the solution of the chloride of antimony being poured into water, further decomposition ensues.

Chloride of Antimony.	*Water in excess.*
Chlorine.*	†Oxygen.
Antimony.†	*Hydrogen.

* * Become muriatic acid, which is removed by the excess of water.

† † Form sesqui-oxide of antimony, which is precipitated.

The precipitate being moistened by an acid solution must be well washed with water and a weak alkaline solution, till all the acid is removed, as indicated by the litmus test.

The sesqui-oxide thus prepared is a white powder, yellow when heated; if heated to redness in the open air it is still further oxydized, forming antimonious acid. With tartaric or other vegetable acids, and their salts of potash, it forms several double salts, of which *tartar emetic* is the most important.

This oxide of antimony is not used separately in medicine, and in Pharmacy it is employed for the preparation of tartar emetic.

When muriatic acid cannot be procured, this oxide may be obtained by the following process, which will often be adopted in India.

Crocus of Antimony.

Sulphuret of antimony and common saltpetre, each in powder two lbs.

Moisten with water, and make the paste into a pyramidal cone, which dry by exposure to the sun or hot air. When dry, ignite the apex with a red hot iron; after the combustion has ceased rub what remains to a fine powder, and wash

it in boiling water till the solution does not blacken lead test paper, nor precipitate the nitrate of baryta test.

In this process the following re-action takes place:—

	Nitrate of Potash.	
Sulphuret of Antimony.	*Nitric Acid.*	*Potash.*
Sulphur,*†	Nitrogen,	†*Potassum.
Antimony,§	Oxygen,§†	*†Oxygen..

* Produce Sulphuret of Potassium.
*† ——— Sulphate of Potash.
§ ——— Oxide of Antimony.

The powder thus prepared is called the *crocus* of antimony, the colour of the crocus is yellow. When moistened, it exhales an odour of sulphuretted hydrogen. The proportion of oxide of antimony it contains is very variable. In practice it is found preferable to use the common instead of the refined saltpetre. The former contains some muriate of soda, which is decomposed during the ignition, emitting nitric acid fumes, and saturating some free alkali formed by the ignition of the saltpetre, and also decomposing part of the sulphuret of potassium. These objects are gained in the London Pharmacopeia by the direct addition of muriatic acid during the process. In the proportions above directed, when the sulphuret of potassium, sulphate and muriate of potash, and all soluble matter are removed, the residues still contains a mixture of some sulphuret of antimony with the sesqui-oxide of this metal.

Tartar Emetic.

(*Antimonium Tartarizatum.*)

Take of the precipitated muriatic oxide of antimony above described three ounces, cream of tartar powdered four ounces and two drachms, and water twenty-seven ounces.

Mix, boil for an hour and filter. Remove the crystals deposited on cooling. Concentrate the liquor and crystallize again. The second crystals must be re-dissolved and re-crystallized.

Or take the crocus resulting from the process, and in the quantities above described, cream of tartar fourteen ounces. Mix and boil for half an hour in a gallon of distilled water,

strain while hot and crystallize. Dry the crystals, and concentrate the liquor as above directed.

Remarks.—The first of these processes is far preferable to the second, as the oxide of antimony is used in the pure state, while in the latter it is mixed with the sulphuret, and that in uncertain proportions.

Cream of tartar contains—

Tartaric acid,	2	equivalents.
Potash, „	1	„

In the above process, the second equivalent of acid unites with two equivalents of sesqui-oxide of antimony. The ditartrate of antimony thus formed, with tartrate of potash and three equivalents of water form together the double salt, termed by the London College, *potassio-tartrate of antimony;* 100 parts of this salt contain—

Tartaric acid,	36.6
Potash,	13.3
Sesqui-oxide of antimony,	42.6
Water,	7.5

Tartar emetic crystallizes readily, the crystals being rhomboidal in the middle, and terminating in four-sided truncated pyramids. When pure, these crystals are colorless, inodorous, of slightly astringent taste, soluble in fifteen times their weight of water at 60°, and twice their weight at 212°, insoluble in alcohol.

For the adulterations and tests, *see the List of Materia Medica.*

Cream of tartar is perhaps the most common adulteration. It is detected by a saturated solution of cream of tartar, which will dissolve the tartar emetic, but not the cream of tartar, which accordingly remains behind.

Tartar emetic is decomposed by acids, alkalies, alkaline carbonates, several earthy and metallic solutions, also by bitter and astringent vegetable substances.

Use in Medicine.—This preparation is the most certain and valuable of all emetics, two grains being dissolved in a pint of water and a wine glassfull taken every quarter of an hour, aided by draughts of tepid water till free vomiting is produced.

The same mixture in much smaller doses, given at longer intervals, nauseates without causing vomiting, and occasions profuse diaphoresis.

The eighth of a grain added to two of the ordinary cathartic pills, increases the certainty of their action.

In the treatment of ardent fevers and of acute inflammation of many important viscera, nauseating doses of tartar emetic are only inferior to venesection in their power of repressing inflammatory action.

In the acute inflammation of the central tissue of the lungs, (pneumonia,) large doses of tartar emetic, amounting from twenty to thirty grains daily, have been given with great success in one-half grain doses every half hour, dissolved in a very weak solution of cinchona bark. No emetic effect is produced, but the inflammation yields as if the remedy exerted a direct sedative action.

Externally.—One drachm of tartar emetic made into an ointment with one ounce of lard or simple liniment, rubbed on the skin in small portions, and the friction repeated twice or thrice daily, will in two or three days (and frequently sooner,) occasion the eruption of large pustules. The irritation and inflammation thus caused, are often found to be very beneficial in the treatment of the early stage of consumption, and in several other inflammatory states of internal organs.

Antimonial Wine.

Vinum Antimoniale.

Tartar emetic two scruples, sherry wine one pint, dissolve.

Each fluid ounce contains two grains of the tartar emetic. To be used according to the suggestions under the last section. The ordinary dose is fifteen minims to one fluid drachm.

Antimonial Powder.

Pulvis Antimonialis.

Sulphuret of antimony one pound, shavings of deer's horn two pounds, mix and throw into a crucible, and make this red hot, stirring until no vapour is emitted. Powder what is left, and keep it red hot in a crucible for two hours. Reduce to very fine powder.

The shavings on being incinerated, leave phosphate of lime; the sulphur is expelled as sulphurous acid, and the antimony remains as antimonious acid.

Antimonious acid (*Ant.* O. 4,) is insoluble in water, not volatile, forms salts with alkalies. It is quite inert when administered to animals or man.

According to Mr. Phillip's analysis, the antimonial powder of the shops, and the celebrated "*James' Fever Powder*," contain, the former thirty-five, the latter fifty-six of antimonious acid, per 100. It is difficult to conceive how either of these preparations can produce the effects generally ascribed to them. The majority of practitioners consider them valuable diaphoretics, and capable of producing the effects of small doses of solution of tartar emetic. We should prefer the latter remedy in all cases, but we have given the usual formula for this preparation.

The dose usually given is from five to ten grains, it is mostly prescribed with calomel, which may probably account for its supposed activity.

Golden Sulphuret of Antimony.

Sulphuret of antimony one ounce, solution of potash eleven fluid ounces, water two pints; boil for an hour in a porcelain vessel, filter immediately, and precipitate while hot with an excess of dilute sulphuric acid. Collect on a calico filter, wash with water, and dry on the water bath.

This preparation is of bright orange colour, taste rather astringent, insoluble in water, loses twelve per cent. of the sesqui-oxide of antimony when boiled with bitartrate of potash.

According to Mr. Phillip's analysis it contains:—

Sesqui-oxide of antimony,	12
Sesqui-sulphuret of antimony,	76.5
Water,	11.5
	100

When the substances used are boiled together, most of the sulphuret of antimony is dissolved without alteration. A small portion however is converted into sesqui-oxide which is also dissolved; on adding the acid, sulphate of potash is formed, and the oxy-sulphuret of antimony is thrown down, while sulphuretted hydrogen is expelled. Other and more complex changes are supposed to take place, but minute details of the re-aotion would be misplaced in this work.

Use.—The *golden sulphuret of antimony* is an ingredient in the *compound calomel pill.* It is now seldom or never given internally by itself. The usual dose was one to four grains twice daily; we have seen half drachm doses given every third hour without any perceptible effect.

ARSENIC, (*Preparations of*)

Arsenic is a metal resembling steel in colour, crystalline, volatile below a red heat, vapor of strong garlic odour; readily oxydized. With one equivalent of oxygen it forms the *arsenious,* with two equivalents the *arsenic* acid. With sulphur forms the yellow sulphuret, *orpiment,* and the red, *realgar.* Equivalent 38.

Arsenious acid.—(As. 2, ox. 3,) this occurs in powder or white masses of two varieties, one porcelainous, the second glassy in appearance; hard, brittle, inodorous, tasteless; sp. gr. of the glassy kind 3.715, of the porcelainous 3.260; volatile at 380°. A thousand parts of water at seventy-five dissolve between ten and eleven parts of the porcelainous kind in twenty-four hours; 1000 parts of boiling water dissolve ninety-seven, and deposit seventy-nine on cooling, in small eight-sided crystals.

Arsenious acid combines with the oxides and alkalies, forming salts called *arsenites.*

A solution of arsenious acid is precipitated *yellow* by ammoniaco-nitrate of silver, *green* by ammoniaco-sulphate of copper, *yellow* by sulphuretted hydrogen and hydrosulphuret of ammonia, on a little acetic acid being added.

Arsenious acid mixed with dry black flux and heated to low redness, gives off metallic arsenic.

A solution of this acid is decomposed by hydrogen, the metal is volatilized with the gas, and on burning this, metallic arsenic, arsenious acid and water are reproduced. The two former are deposited on cool glass or porcelain surfaces, with which the flame is brought into contact. This constitutes the basis of Marsh's invaluable process for detecting arsenical poisons, a full description of which is given in the Appendix to the *Dispensatory.*

Arsenious acid is a formidable poison. The symptoms produced are chiefly those of intense irritation and inflammation of the alimentary canal.

Several cases have recently been published, which shew, that the hydrated peroxide of iron given in large doses is a useful antidote to this poison. For the mode of preparing and using this substance, see the Preparations of *Iron.*

The stomach pump, emetics, copious draughts of milk and other demulcents, oily purgatives, free leeching of the abdomen, and large opiates, constitute the chief remedial measures in poisoning by this substance.

Reinsch's Process for detecting Arsenic.

A process still more delicate than that of Marsh has recently been invented by Reinsch, and is already adopted by the highest authorities on the subject of toxicological chemistry. It consists in boiling the suspected substance with metallic copper and strong muriatic acid. Metallic arsenic is deposited as a black coating on the copper, and by removing this metal from the liquid, washing it with a little water and allowing it to dry, on heating it in a glass tube the metallic arsenic and crystals of arsenious acid sublime.

The exceeding delicacy of this process is almost incredible, and it is this which constitutes the most serious objection to its adoption. This will be understood when we state that a drachm weight of the

copper of commerce as it occurs in Bengal, gives, after having been boiled with muriatic acid, a copious arsenical sublimate.

The only mode of obviating this fallacy is by the use of *electro-type* copper, which is of absolute purity. When this copper is available, and the experiment is conducted by a competent hand, Reinsch's plan is as superior to Marsh's process, as that was to the old method of precipitation by sulphuretted hydrogen.

Arsenic acid.—(As. 2, ox. 5,) is prepared by boiling arsenious acid with nitric acid. It is more soluble than the arsenious acid, and precipitates the ammoniaco-nitrate of silver of a brown red colour. Its salts are termed *arseniates.*

Realgar.—(Bi-sulphuret of arsenic, As. 1, S. 2,) exists in the native state, in brilliant red crystalline masses.

Orpiment, (or king's yellow) ter-sulphuret of arsenic, (As. 1, S. 3,) is found native, and is also prepared by the action of sulphuretted hydrogen or hydro-sulphurets on a solution of arsenious acid. It is of yellow colour, fusible, volatile, soluble in alkalies, insoluble in acids, decomposed and oxydized by boiling with nitric acid. It unites with bases to form salts termed *sulpho-arsenites,* and is reduced to the metallic state by being heated with the black flux.

The paint called king's yellow, is usually adulterated with lime and sulphur.

Solution of Arsenite of Potash.

Arsenious acid in small pieces, carbonate of potash each eighty grains, boil in half a pint of distilled water in a glass vessel until dissolved. Add compound tincture of lavender five fluid drachms, and distilled water sufficient to bring the entire accurately to one pint.

The compound tincture of lavender is added merely to colour the mixture, and as a preventative of accidents; an equal quantity of tincture of turmeric may be substituted.

In this process, arsenite of potash is formed and dissolved. The solution is decomposed by acids, soluble sulphurets, lime water, earthy and metallic salts, and astringent solutions.

Use.—Arsenic especially in this form has long enjoyed high repute as a febrifuge, and as an alterative in syphilis, scrofula, elephantiasis, and in many cutaneous diseases. The formula above given is that formerly called "Fowler's Solution."

Many forms of ague which have resisted every other remedy, have been successfully treated by this. Its use is not contra-indicated by enlarged spleen; but chronic hepatitis and dysenteric symptoms

should forbid its administration. The anti-periodic effects are too slow for the treatment of remittent fevers.

Dose.—Four to twenty minims twice or thrice daily. 120 minims contain one grain of arsenious acid. Its use must be at once discontinued if vomiting, purging, pain at the epigastrium, convulsive twitchings or intense itching of the eyelids supervene. These symptoms are best combated by oily purgatives, diluent drinks and leeching the epigastrium.

BARIUM, (*Preparations of*)

BARIUM is the metallic base of the alkaline earth BARYTA. It occurs chiefly as the sulphate and carbonate, and is artificially prepared from its oxide by voltaic analysis, or by the vapour of potassium. It is a dense white metal like silver.

	Oxygen scale.	Hydrogen scale.
Symbol Ba., equivalent,.....	856.9	68.7

Barium forms two oxides, the protoxide is the earth barytes. This with sulphuric acid forms sulphate of baryta, a substance insoluble in water or in the strongest nitric or muriatic acid.

The carbonate and all the soluble salts of baryta are acrid poisons. The sulphate of soda or magnesia is a perfect antidote, the insoluble sulphate of baryta being formed by the mixture of the two substances.

SULPHURET OF BARIUM.

Take of *sulphate of barytes* (*a*) in fine powder one pound, lamp black four ounces, make into balls with a little water and allow these to dry, then heat them intensely in a draught furnace in an earthen crucible for two hours; boil the mass in water; the solution is deep yellow, and gives crystals of sulphuret of barium on cooling.

In this process the carbon takes the oxygen both of the acid and the baryta, and sulphuret of barium remains.

This sulphuret of barium is soluble in dilute nitric, acetic, and muriatic acids, which it neutralizes. On evaporating the solutions the nitrate, muriate, or acetate of baryta are obtained.

a. *Sulphate of baryta* was imported into Bengal in large quantities about four years since, under the name of "*Imperial white,*" and sold as a substitute for white lead. It sold at two annas the pound, and was purchased up, chiefly to adulterate that article. Small casks

of this substance are still to be met with. The sulphate of baryta may be separated from carbonate of lead by acetic acid, which dissolves the lead and leaves the sulphate of baryta untouched.

Muriate of Baryta.

Decompose the sulphate of baryta by lamp black as above directed, and to the solution add muriatic acid till sulphuretted hydrogen ceases to be evolved; filter, concentrate, and crystallize.

Muriate of baryta is colorless, occurs in rhombic plates; forty parts dissolve in 100 of water at 60°. Its solution is precipitated by sulphuric acid and sulphates, not by ammonia.

Use.—Muriate of baryta was once employed in medicine in the treatment of scrofula chiefly, but the practice has become rare, and is not recommended. The most valuable application of this substance at present is the detection and estimation of the quantity of sulphuric acid or sulphates present in a solution. For the details of its employment for this purpose, *see the article—Tests.*

Nitrate of Baryta.

Prepared as above, substituting the nitric acid.

The disengaged gas in all these decompositions is very offensive and deleterious, and the experiment should be performed, so that the fumes may be directed into a chimney, or otherwise freely carried off.

When carbonate of baryta is procurable, it should be substituted for the sulphate in the processes above described.

BISMUTH, (*Preparations of*)

Bismuth is a brittle white metal, with a tinge of red, crystalline, readily fusible (at 476°), sp. gr. 98.82. Symbol B., equivalent 80°; is oxidized by heat and air, and violently acted upon by nitric acid.

White Oxide of Bismuth.

Bismuth in fine powder an ounce, nitric acid a fluid ounce and a half, water one ounce, dissolve the bismuth, decant the solution, and add the remainder of the water; let the

powder subside, decant and wash the residue with distilled water. Dry it with a gentle heat.

In this process the bismuth is oxidized by the nitric acid and then dissolved. On the affusion of water, the solution is decomposed, and a white precipitate subsides, this is composed of

One eq. nitric acid, ...	54
Three eqs. oxide of bismuth, (80 × 3)	240
	294

This substance is white, crystalline, insoluble in water, blackened by sulphuretted hydrogen.

Use.—Much given in gastrodynia, and some forms of dyspepsia. *Dose*, from five to fifteen grains thrice daily.

CALCIUM, (*Preparations of*)

CALCIUM is the metallic basis of lime. It is only procured in exceedingly minute quantities by the action of potassium or voltaic analysis on lime, the oxide of the metal.

LIME, (*Calx.*)

Pure lime is procurable as a bazar article. The purest is that made by calcining shells. Before use, it should be subjected to a strong red heat; chalk may be used instead of shells. In shells and chalk the lime is combined with one eq. of carbonic acid, which is expelled by the heat.

Lime is white, acrid, corrosive, soluble in water. Composition, *Calcium*, one eq. = 20 *Oxygen*, 1 eq. = 8 = 28. Lime is powerfully alkaline, unites with the acids to form salts; of these the carbonate, phosphate, and oxalate are very insoluble in pure water, the sulphate difficultly so. The nitrate, muriate, and acetate are deliquescent. When water is sprinkled on recently burned lime, much heat is evolved, the lime falls to powder, and every twenty-eight parts combine with nine of water forming a solid hydrate; on this depends the property of absorbing water from many substances for which lime is employed in several pharmaceutical and chemical processes.

Lime Water.

Aqua Calcis.

Lime recently burned half a pound, slake it with a little water, and then agitate with as much water as will make the whole twelve pints. Keep the solution and the deposit together in stoppered glass vessels.

Lime is more soluble in cold than in hot water; according to Mr. Phillips —

A pint of water at 32° dissolves 13.25 grs.
——————— 60° ——— 11.6
——————— 212° ——— 6.7

Lime water is highly alkaline. By exposure to the air a white crust of carbonate of lime forms upon its surface, and this soon renders the solution inert. Lime water is not precipitated by sulphuric acid. With oil it forms a useful liniment or fluid soap.

Uses.—Employed against acidity, in dyspepsia, and diluted as an external application chiefly in leucorrhœa. It has been given also, but we think with very questionable benefit, in chronic dysentery, and diarrhœa. It is usually taken in doses of from one to four fluid ounces, administered in milk.

Muriate of Lime.

Murias Calcis.

Chalk or powdered marble or well burned shells, ten ounces, commercial muriatic acid and water each one pint. Add the lime or chalk by degrees, agitating and stirring the mixture till it is neutral to litmus paper, filter, evaporate on a porcelain or silver capsule at a brisk heat to complete dryness, remove quickly, break the salt into pieces, melt these in a clean iron crucible. When fused, pour the liquid on a marble or metal slab, and the moment it concretes, divide into pieces and place these in an accurately stoppered bottle.

The muriatic acid first dissolves the lime with which it forms muriate of lime, thus —

Muriatic acid.—Hyd. 1, chlorine 36, ... 37
Lime — calcium 20, oxygen 8, ... 28

On drying and fusing this, the oxygen and hydrogen (9) are expelled as water, and dry chloride of calcium (chl. 36, cal. 20) remains.

Properties.—Colorless, inodorous, bitter, extremely deliquescent; at 60° water dissolves four times its own weight of this salt. It is also soluble in alcohol.

Use.—For abstracting water from various solutions, drying gases, for testing ether and in other experiments, and in the preparation of the muriate of morphia.

For most of these purposes, except the last, the residue of the process for obtaining ammonia, which consists of muriate of lime and excess of lime and water, by concentration, drying and fusion, may be used instead of this preparation.

In Medicine, small doses of muriate of lime have been given with doubtful benefit in bronchocele and scrofulous diseases.

Chloride of Lime.

Calx Chlorinata.

Slaked lime a pound or more, strew this in thin layers on earthenware plates, and having piled these on each other, leaving an interval of an inch at least, (the upper vessels can be supported on pieces of wood or earthenware,) cover the entire by inverting over it a large earthen pot, surround the edges with sand or a paste of clay. A leaden pipe is led through a cork in the side of the jar, and runs within an inch or so of its lower edge when inverted. A cork or a wooden stopper is introduced into a corresponding opening at the top of the jar.

This cork being removed, fill the earthen vessel with *chlorine* disengaged from the materials, and in the vessels described under that head. When greenish yellow fumes begin to be disengaged at the upper opening, close it for a time.

In commerce this is called *bleaching powder* or *chloride of lime.* It is manufactured in immense quantities for the dyers and bleachers.

The usual composition of this substance is Chlorine, ... 36
Lime (hydrate) 2 eqs., 74

110

As found in commerce it is white or greyish, of acid taste, weak odour of chlorine, partially soluble in water. If exposed to the air it is decomposed, carbonate of lime being formed, and chlorine disengaged. It is a powerful bleacher, as may be seen by adding it gradually to a solution of Indigo in sulphuric acid.

The chlorine it disengages is an efficient corrector of the putrid odour of animal or vegetable matters in a state of decomposition. Hence it has been celebrated as a destroyer of the miasmata of Hospitals, and as a preventative against the spread of epidemic diseases. The prevalence of cholera in more than one of the large establishments in Europe where this substance is manufactured, and where the workmen are continually inhaling its fumes, has deprived the chloride of lime of much of the confidence it possessed for this alleged property. It certainly corrects disagreeable odours, but whether its use extends further is very questionable.

Use.—For fumigating hospitals, prisons, &c. pans containing the chloride may be placed throughout the wards, or the solution sprinkled about. As the vapour often proves very distressing to persons unaccustomed to such exhalations, or suffering from inflammatory diseases of the lungs, the quantities used, and the repetition of the fumigation should be regulated with care.

The inhalation of the vapour arising from a very weak solution of chloride of lime has been recommended on strong authority for patients labouring under consumption. They are made to inhale its fumes from a convenient vessel; slight irritation of the ulcerated surfaces, it is said, has thus been occasioned, and in some cases a cure effected. Iodine has been similarly used, and with alleged similar results. The practice is not as yet established, nor the results described generally admitted.

Prepared Chalk.

Creta Præparata.

Take good chalk, reduce it to fine powder with a little water in a stone or marble mortar. Pour it into a large vessel containing water, and agitate it briskly. After the coarser particles subside, pour the milky liquor into another vessel and let it deposit. Repeat this process with the coarse residue of the first portion as often as necessary, collect the fine chalk on a calico strainer, and wash with distilled water and dry.

Chalk (carbonate of lime) is composed of—

Carbonic acid	1 eq.	= 22
Lime ..	1 eq.	= 28
Equivalent, ...		50

The whitest chalk should be employed; in India this is sometimes adulterated with pipe clay. This is detected by the action of dilute nitric, muriatic, or acetic acid, which dissolves the chalk and leaves the clay.

Prepared chalk is used as an ingredient in the aromatic confection, mercury with chalk, chalk mixture, compound chalk powder, compound lead ointment. It is also used in the preparation of citric and tartaric acid, the sesqui-carbonates of ammonia and soda, and bicarbonate of potash.

Use.—A valuable remedy in acidity, much given to children. *Dose*, ten grains to a drachm.

COPPER, (*Preparations of*)

Cupri præparata.

Metallic copper is too familiarly known to need description; its symbol is *Cu.* equivalent *32*—sp. gr. 8.9. It forms two oxides, a din-oxide containing 1 eq. of oxygen (8) and two of copper 64 = *72*; and the protoxide of copper, one eq. copper, *32*, oxygen one eq. 8 = 40.

The protoxide of copper is black, soluble in the sulphuric, nitric and acetic acids, forming corresponding salts, from the solution of which it is precipitated as a greenish hydrate by alkalies; the precipitate is dissolved by ammonia, the solution being of a rich blue colour.

The *black oxide of* copper is much used in organic analysis, and is best prepared for this purpose by calcining the nitrate of copper at a red heat.

Sulphate of Copper.

Sulphas Cupri.

The *Sulphate of copper* (*neel tutiya*) is a common bazar article, being manufactured in many parts of Bengal and the

eastern Islands; it is easily prepared by heating copper to redness in contact with the air, removing the black scales which form, and dissolving these in dilute and boiling sulphuric acid, and crystallizing. In the refining of silver it is incidentally prepared in very large quantities.

Sulphate of copper is composed of—

Sulphuric acid	1 eq.	= 40
Oxide of copper	1 eq.	= 40
Water	5 eqs.	= 45
		125

Sulphate of copper occurs in splendid blue crystals, is insoluble in alcohol, decomposed by alkalies and alkaline carbonates. The solution is precipitated brown by ferrocyanuret of potassium, black by hydrosulphuret of ammonia, and deposits metallic copper upon iron or zinc.

Sulphate of copper sometimes contains sulphate of iron. This is detected by adding ammonia in excess, which precipitates both the oxides of copper and iron, but re-dissolves the former.

Use.—Escharotic, astringent and emetic.

Externally it is much used as a caustic and stimulating application to indolent ulcers, chancres, &c. In doses of half a grain to one grain thrice daily, combined with opium, it is much given as an astringent in chronic dysentery; five grains dissolved in half a pint of water prove almost instantly emetic, and sulphate of copper is often given for this purpose to persons labouring under dyspnœa produced by accumulations of mucus or pus in the lungs. The mechanical shock dislodges these fluids, while the patient does not suffer from nausea as with other emetics.

Acetate of Copper.

Acetas Cupri.

Acetate of copper (*ærugo, verdigris*) is like the sulphate a common bazar article, being imported chiefly from France. It is a compound of one equivalent acetic acid and two of oxide of copper; muriatic acid should dissolve it, leaving about five per cent. of impurities. It is also almost entirely soluble in dilute sulphuric acid and in ammonia, and partially in water.

Verdigris is prepared on the large scale by strewing copper plates with grape husks. During the fermentation of the traces of sugar in the husk, the copper combines with oxygen, and the oxide with acetic acid formed by the grape sugar. The process is extremely tedious. We have made a very good article by using tamarind pulp instead of the grape.

Acetate of copper is astringent and escharotic. For its use, see the *Liniment of Verdigris.*

Ammonio-Sulphate of Copper.

Cupri Ammoniuretum.

Sulphate of copper an ounce, sesqui-carbonate of ammonia an ounce and a half, rub together in a glass or Wedgwood mortar. Effervescence takes place, and the mixture becomes semi-liquid. Wrap the mass in filtering paper, and preserve it without further drying in a stoppered bottle.

This is a mixture of carbonate of copper, sulphate of copper and sesqui-carbonate of ammonia. When recently prepared it is of a fine blue colour and strong ammoniacal smell.

Use.—It is given in doses of a quarter of a grain gradually increased, in pills with crumb of bread, as a tonic and antispasmodic, especially in chorea and some forms of epilepsy. When these affections depend on organic disease this substance is likely to do harm.

Solution of Ammonio-sulphate of Copper.

Dissolve one drachm of the ammonio-sulphate in one pint of water, filter.

Use.—Diluted with water this solution is much used as an application for the removal of specks on the cornea.

IRON, *(Preparations of)*

Ferri Præparata.

Iron.—Pure iron is bluish-white, brilliant, soft, flexible, malleable and ductile, very infusible, welds at a high tem-

perature, sp. gr. 7.8, combustible in oxygen gas, oxydized by damp air, the mineral and several organic acids; decomposes water at a red heat. There is still some doubt about the equivalent of iron. The latest authorities fix it at 27.2 on the hydrogen, 338 on the oxygen scale. Symbol *Fe*, from the Latin *Ferrum*.

The *oxides* of iron are two—the protoxide (Fe. 27.2,0x.8, eq. 35.2, the basis of several important salts. The peroxide (Fe. 2,0x.3.) = 78.4, also the basis of salts of much value. These two oxides of iron again form different compounds with each other.

Chlorine, iodine, and sulphur also unite with iron, forming analogous compounds.

The *protosalts* of iron are soluble in water, precipitated of a dull green, (the hydrated protoxide) by alkalies, and alkaline carbonates, and the precipitate very rapidly passes into the peroxide. The salts of the peroxide are precipitated brown-red by the same reagents.

The ordinary salts of iron found in commerce and medicine when dissolved in water, give the following precipitates or colours with the tests named.

Prussiate of Potash, protosalts,	...	.. white.
——————, persalts, ...	...	... blue.
Alkalies, persalts, ...	...	... brown.
Tincture of galls and astringent solutions,		... blue-black.
Meconic acid, ... } per-salts,	...	} red.
Sulpho-cyanate of Potash, }	...	}
Hydro-sulphuret of ammonia, in neutral solutions, ...	...	} black.

Pure *protosalts* are distinguished from the pure persalts by the *red* or ferro-sesqui-cyanuret of potassium, which gives Prussian blue with the proto-salts, and does not affect the salts of the peroxide.

Sulphate of Iron.

Sulphas Ferri.—Green vitriol.—Heera kasis.

This salt is formed abundantly by the natural oxidation of the sulphuret of iron, a mineral common especially in coal districts.

It occurs in the bazars in large masses of green crystals, and in a state of considerable purity. For medical use select the greenest

and most transparent crystals. If impure, dissolve in warm water acidulated with sulphuric acid, and set aside till crystallization occurs. The crystals are to be kept in closely stoppered bottles. If not procurable in the bazar, it may be made artificially, thus:

Iron filings or wire eight ounces, sulphuric acid fourteen ounces, water four pints. Mix in a capacious earthen ware vessel; when no more gas escapes strain and set aside for crystallization. The residual liquor will give more crystals.

In this process water is decomposed, its hydrogen escapes, its oxygen unites with the iron, and the resulting oxide with the sulphuric acid forms protosulphate of iron. The crystals are composed of—

1 eq.	Sulphuric acid, ...	40
1 eq.	Protoxide iron, ...	35.2
7 eq.	Water, ...	63
		138.2

The crystals are bluish-green, insoluble in alcohol, soluble in two parts of cold water, the solution attracts oxygen from the air, and deposits peroxide of iron; taste styptic. The solution when free from peroxide is precipitated white by prussiate of potash, but the precipitate rapidly changes to a deep blue.

By exposure to heat, the crystals lose six equivalents of water, and the salt becomes a white powder. At a red heat, the seventh equivalent of water and the acid are expelled. The acid is a mixture of dry sulphuric acid, sulphurous acid and water, and is prepared on the large scale in Germany for the use of dyers. There remains in the retort the red anhydrous peroxide of iron.

Incompatibles.—Alkalies and their carbonates, alkaline or earthy soaps, astringent matter, salts of lead, silver, baryta, all astringent solutions.

Use.—Tonic and astringent in doses of from one to four grains. It is usually given with the extracts of gentian or chiretta, or with sulphate of quinine. It enters into the composition of some chalybeate mineral waters.

Iron, Peroxide of,

Ferri Peroxidum.

Sulphate of iron six ounces, sulphuric acid three and a half fluid drachms, water two pints; dissolve and add by degrees nitric acid nine fluid drachms, boiling after each

addition (in a porcelain vessel.) Boil till the liquid assumes a yellow-brown colour, filter, cool, and when cold, add at once water of ammonia three fluid ounces and a half; agitate the mixture, strain through calico and wash with distilled tepid water till the washings do not precipitate the nitrate of baryta test; squeeze and dry the precipitate at 180° on the water bath.

In this process the protosulphate of iron is peroxydized by the nitric acid, and the peroxide separated by ammonia in the state of hydrate, sulphate of ammonia being formed.

This preparation is intended as an antidote to poisoning by arsenic, and for this purpose it should be kept in the moist state, and half ounce doses given every half an hour, diffused through two to four ounces of water. The mode of action of the antidote is uncertain, but its success is asserted on the evidence of some very strong cases.

This compound is nearly the same as that resulting from the London process for preparing the old carbonate of iron. This preparation derived from the Edinburgh Pharmacopeia, is much more certain and definite.

Use.—Tonic. Used in half drachm doses in tic doloroux; and in doses of from five to twenty grains with aromatics every six hours in diarrhœa.

We believe that the powers of this substance in the treatment of those diseases have been much overrated.

Proto-sulphuret of Iron.

Heat a piece of iron to a white heat in a smith's forge, and rub it with a piece of sulphur. The sulphuret falls down in fused drops.

This preparation is not used in medicine, but it is much employed for the preparation of sulphuretted hydrogen gas, which it yields abundantly when acted upon by very dilute sulphuric acid.

Tincture of Permuriate of Iron.

Peroxide of iron dried six ounces, muriatic acid a pint. Mix in a glass vessel and let it remain, stirring it frequently till dissolved, then add rectified spirit three pints.

This is a simple solution of sesqui or perchloride of iron in spirit. Perchloride of iron contains

Chlorine, eqs. $1\frac{1}{2}$, ...	54
Iron, eq. 1, ...	27.2
Equivalent, ...	81.2

This tincture is of yellowish-red colour, acid reaction, and astringent taste, sp. gr. 992; a fluid ounce yields to potash 30 grains of hydrated sesqui-oxide of iron.

It is decomposed by all the substances mentioned under the head of sulphate of iron.

Use.—An excellent tonic, especially in chlorosis, amenorrhœa and scrofula. *Dose*, ten to thirty minims thrice daily—very useful in splenitis, scurvy and the convalescence from many acute diseases and fevers. In retention of the urine from spasmodic structure, it has gained great celebrity almost as a specific, being given in ten minim doses every ten minutes till a decided effect occurs. It is also much used in chronic hœmorrhage, suppuration and catarrh of the kidneys, bladder, and urinary organs. Externally it is a powerful styptic to bleeding or ulcerated surfaces.

Tartrate of Iron and Potash.

Prepare the peroxide of iron in the manner and proportions indicated under that head. Take the moist oxide, mix with four pints of water, and add cream of tartar powdered five ounces and one drachm.

Boil till the peroxide is dissolved, cool and test with litmus paper; if acid, neutralize carefully with a little of the solution of carbonate of ammonia. Evaporate the whole to dryness on the water bath, and preserve the product in well-stoppered bottles.

This product is composed of

Tartrate of potash 1 eq., ...	114
Tartrate of peroxide of iron 1 eq., ...	106
	220

It contains eighteen per 100 of peroxide of iron. *(Phillips.)*

Use.—A very useful tonic, having but little taste. *Dose*, ten to thirty grains in solution. Well adapted for children.

Muriate of Iron and Ammonia.

Dried peroxide of iron three ounces, muriatic acid half a pint; dissolve by a gentle heat, then add muriate of ammonia two pounds and a half, distilled water three pints; strain, evaporate to dryness, powder, and preserve in stoppered phials.

The product is, according to Phillips, a mixture of—

Perchloride of iron, ...	15
Muriate of ammonia,...	85
	100

Color orange, deliquescent, soluble in alcohol, taste sharp and styptic. It is decomposed by the same agents as the sulphate of iron.

Use.—A tonic and supposed emmenagogue, but little used by modern Practitioners.

A tincture is prepared by dissolving four ounces of the solid product in a pint of proof spirit. A fluid ounce contains five-eighths of a grain of peroxide of iron. (Phillips.)

Use, as above, dose ʒi. to ʒij. in water.

Ioduret of Iron, (*Solution of*)

Iodine (dry) one hundred and ninety grains, clean and thin iron wires one hundred grains, distilled water six fluid ounces; boil in a narrow necked flask for an hour till the liquid becomes colourless, filter through calico, (previously well washed in boiling water to take away any starch,) add boiling water to make up six fluid ounces. Preserve in stoppered ounce phials, each holding a coil of clean iron wire, and covered with paper to exclude light.

Ioduret of Iron, (*solid.*)

Proceed as above in preparing the solution, but concentrate to one-sixth before filtering. Put the strained liquor into a capsule, and surround this with a quantity of quicklime, cover the whole with a tin plate cover, painted black externally, and expose it to the sun's rays. Examine occa-

sionally, and it will be soon found to be perfectly dried. In the rainy season, the apparatus must be heated very gently in the stove. The dried iodide must be kept in carefully stoppered bottles.

[For the properties of *iodine*, see that head.]

In this process a proto-ioduret of iron is formed, composed of

1 eq. Iodine, ...	126
1 eq. Iron, ...	27.2
5 eqs. Water, ...	45
	198.2

We have adopted the Edinburgh process, which is much more certain in its results than the London.

The solution rapidly attracts oxygen from the air, to prevent which, the iron wire is directed to be kept in the bottles.

The solution is decomposed by all those reagents which affect the salts of iron, also by starch.

Use.—A very valuable remedy in scrofula, secondary syphilis, and in many cases of enlarged spleen, also in amennorhœa. *Dose*, one to two grains.

LEAD, *(Preparations of)*

Plumbi Preparata.

Lead is a metal of considerable importance in medicine. Its sp. gr. is 11.381, its symbol Pb., equivalent 103.7. It forms but two oxides; the protoxide is yellow when anhydrous, white if combined with water; the peroxide is of dull dark brown colour.

The red lead of commerce (*sendur*) is a mixture of the protoxide and peroxide, containing three eqs. lead and four eqs. of oxygen.

The *litharge* of the bazar *(moordar sang,)* occurs in fused semi-crystalline masses of yellowish colour, soluble in acetic acid. It is formed incidentally in large quantities during the refining of silver by cupellation.

Acetate of Lead.

Acetas Plumbi.

Take of powdered litharge two ounces, acetic acid and distilled water each four pints; mix and dissolve by a gentle heat, strain, evaporate to crystallization.

The product, acetate of lead or sugar of lead, is crystalline, colorless, inodorous, sweetish and astringent to the taste. It is soluble in four times its weight of water at 60°, solubility but little increased by heat, and the solution is decomposed by a current of carbonic acid gas.

Composition—

Acetic Acid,	1	eq. =	51
Oxide of Lead,	1	eq. =	112
Water,	... 3	eqs. =	27
Equivalent,	...		190

This and the other salts of the protoxide of lead are precipitated *white*, by alkalies, alkaline carbonates and lime water; *black*, by sulphuretted hydrogen and the soluble hydrosulphurets; *yellow*, by chromate of potash and ioduret of potassium; metallic zinc decomposes concentrated solutions, the lead being reduced and crystallized and the zinc dissolved in its stead.

Use.—An excellent astringent both for internal and external use, especially in ophthalmia, gonorrhœa, and external inflammation generally. In two or three grain doses thrice daily, it is given with the best results in dysentery and diarrhœa. In internal hæmorrhages even from the lungs, the astringent effects of this preparation are very decided.

In several years' experience of the free administration of this preparation, we have never known an unfavorable symptom produced, although we have seen ten grain doses given every second hour till ʒij. had been taken.

Solution of Diacetate of Lead.

Liquor Plumbi Diacetatis.

Acetate of lead six ounces and six drachms, litharge powdered four ounces, and water a pint and a half; boil for half an hour, strain, and add water to make up six pints; sp. gr. 1,260.

This preparation is a solution in water of

1 eq. Acetic Acid, ...	51
2 eqs. Oxide of Lead, 112 × 2, ...	224
	275

The solution of the diacetate of lead is a useful application in external inflammations. It is popularly called *Goulard's Lotion.* The solution is alkaline to test paper, and is a very delicate test of carbonic acid.

Nitrate of Lead.

Lead six ounces, diluted nitric acid six fluid ounces, and water six fluid ounces, dissolve by a gentle heat and crystallize.

The crystals are used as a test, and in preparing ioduret of lead.

Ioduret of Lead.

Plumbi Iodidum.

Nitrate of lead and ioduret of potassium each one ounce, water a pint and a half. Dissolve separately; mix, strain, and collect the precipitate. Then boil the powder in three gallons of water acidulated with three fluid ounces of concentrated acetic acid, pour off the clear liquor, which on cooling gives a deposit of scaly golden-yellow crystals of ioduret of lead.

The London College direct nine ounces of acetate of lead and seven ounces of ioduret of potassium to be dissolved in a gallon of water, and the precipitate to be merely washed and dried. The Edinburgh process, derived from Soubeiran, affords a much more beautiful article.

Ioduret of lead and nitrate of potash are the results of the decomposition, the ioduret of lead being composed of—

Iodine, one eq. = 126
Lead, one eq. = 104

Equivalent, ... 230

Use.—In small doses internally (a quarter to half a grain thrice daily,) with crumb of bread in pills, and made into an ointment externally applied, in painful scrofulous tumours and ulcerations.

MAGNESIUM, (*Preparations of*)

The magnesian preparations are the product of a metal discovered by Sir H. Davy, and termed *Magnesium.* It is obtained by decomposing the chloride of magnesium by potassium in a glass tube.

Magnesium is brilliant, white, fusible, and malleable at a red heat, does not decompose water, and oxydizes very slowly in the air unless whenh eated to redness; symbol Mg., equivalent 12.7 on the hydrogen, or 158.3 on the oxygen scale.

Magnesium forms one oxide, the base or constituent of the medicinal preparations.

Magnesia.

Carbonate of magnesia any convenient quantity. Heat in a perforated crucible to a white heat for two hours.

The carbonate of magnesia parts with its carbonic acid, and pure magnesia remains.

Calcined magnesia is a beautifully white, very bulky powder, devoid of colour, taste, or odour; does not slake. When boiled in water, a very minute trace is dissolved, but sufficient to restore the blue colour to reddened litmus paper.

Composition,—

Magnesium, 1 eq., ...	12
Oxygen, 1 eq., ...	8
Equivalent, ...	20

Use.—A very valuable antacid and aperient. *Dose*, from five grains to one drachm.

Carbonate of Magnesia.

Sulphate of magnesia four pounds, carbonate of soda four pounds and eight ounces, and water four gallons. Dissolve the salts separately, each in half the water, mix and boil in porcelain vessels, stirring with a wooden rod for a quarter of an hour. Decant the liquor. Wash the sediment with boiling distilled water, till the washings cease to give a precipitate with nitrate of baryta. Strain and compress between folds of cloth. Dry in the stove or before the sun.

In this process double decomposition ensues, thus—

* Carbonate of	† Sulphate of
† Soda.	* Magnesia.

Form :—

* * Carbonate of Magnesia,
† † Sulphate of Soda.

Dried carbonate of magnesia is composed of—

Carbonic Acid, 1 eq., ...	22
Magnesia, 1 eq,.	20
Equivalent, ...	42

As sold in the shops it contains water, thus—

Carbonic Acid, ...	35.76
Magnesia,...	44.76
Water, ...	19.48
Equivalent, ..	100

The proportion of water is sometimes as high as 23 per 100.

Carbonate of magnesia is white, tasteless, insoluble in water, and loses its carbonic acid at a bright red heat.

Medicinal Uses.—The same as those of the calcined magnesia, but less suitable for persons labouring under flatulence; a favorite remedy for children. *Dose* ℈i. to ʒi.

Bicarbonate of Magnesia, (*Solution of*)

This valuable solution is prepared by subjecting carbonate of magnesia diffused through water to the action of a current of carbonic acid gas under pressure, an additional equivalent of carbonic acid is taken up, and the resulting bi-carbonate remains in solution.

This excellent preparation was invented by Sir James Murray.

The solution is transparent, colorless, very nauseous, effervesces very slightly when exposed to the air. By prolonged exposure, it deposits carbonate of magnesia. This is immediately separated by boiling the solution.

Tests.—One fluid ounce should on boiling for ten minutes deposit as much carbonate of magnesia, as when washed and dried on the water bath will weigh seventeen grains. The washings will slightly precipitate nitrate of baryta, but the precipitate should not be sufficient to be collected. A fluid ounce, neutralized with dilute sulphuric acid, should not be blackened by sulphuretted hydrogen, or hydro-sulphuret of ammonia.

Use.—This gives a most agreeable aperient draught; half an ounce to one ounce being taken mixed with *lemon syrup* while in effervescence; citrate of magnesia is thus taken.

As an *antacid*, it is inferior to the old dry preparations, from its excessively disagreeable taste.

Sulphate of Magnesia.

Magnesite powdered two pounds, sulphuric acid one pound, and water one gallon. Mix the acid and water, and

boil in a porcelain vessel. When boiling, add the powdered magnesite gradually and boil, stirring with a glass rod till a slip of reddened litmus paper recovers its blue colour in the solution; filter while hot, and concentrate in a porcelain capsule till a pellicle begins to form on the surface of the liquor. Set aside for twenty-four hours to crystallize.

Any corresponding quantities of the ingredients may be used, and in large operations leaden pans may be employed.

The *magnesite* of Madras is a white, hard mineral, composed of one equivalent of carbonic acid and one equivalent magnesia. It contains no water, is very brittle, and is readily reduced to a fine powder by stamping in a metal or stone mortar; one of stone should be preferred with a heavy stone or hardened iron pestle.

In this process the sulphuric acid displaces the carbonic acid. The solution is slow unless promoted by heat, and with the quantity of water specified, gives more rapid decomposition than with a greater or less proportion.

Where carbonate of magnesia is to be manufactured, the thick mother liquor from which this salt has crystallized, may be used for precipitation by the carbonate of soda, the quantity required being ascertained by an experiment on one fluid ounce.

In England this salt is prepared from *magnesian limestone* by a much more tedious and troublesome process than that above recommended. Formerly it was manufactured from the *bittern* of salt works, but this method has been long abandoned, as the product was found, notwithstanding every precaution, to deliquesce on exposure to moist air. Nevertheless, we deem it useful to give a process for this mode of preparation, as *bittern* can be found in many localities in Bengal, while *magnesite* must be obtained from Madras.

Bittern is the liquor which remains at the salt works after common salt has been separated by boiling. It is acrid and bitter, of yellowish colour, strongly impregnated with iron, contains muriates of lime and magnesia, and bromide (and often iodide) and chloride of sodium, potassium, and other metallic bases.

Take of *bittern* one gallon, solution of carbonate of soda as much as required. Mix the solutions intimately adding the carbonate of soda while any precipitate occurs, filter through cloth, and wash with water till the washings are tasteless, and do not precipitate with nitrate of baryta, compress the precipitate by screw pressure.

The precipitate is a mixture of carbonate of magnesia and carbonate of lime in variable proportions. Dry one hundred grains of the pressed precipitate on a water bath, and ascertain thus the proportion of water.

Take of the press-cake as much as would give in the dried state two pounds, sulphuric acid one pound, water one gallon, dissolve by a gentle heat, filter and concentrate till it becomes turbid. Allow it to cool and filter again; this separates much of the sulphate of lime, now boil down till a pellicle forms, and set aside to crystallize. The mother liquor should be rejected.

This process is troublesome and comparatively unproductive. The product is always contaminated by sulphates of lime and iron, and although by the modification we have introduced of precipitating by carbonate of soda, it is freed from muriate of lime, still the article is in every respect inferior to that prepared from *magnesite*.

Preparation of sulphate of magnesia from magnesian limestone.

This mineral abounds in Sylhet. The sp. gr. is 2.86; it is of yellowish-brown or greyish colour, soluble slowly in dilute muriatic acid with effervescence. It contains one eq. of carbonate of lime = 50, and one eq. carbonate of magnesia = 42.

It should be stamped to coarse powder and boiled in dilute sulphuric acid in leaden pans, the sulphate of lime will gradually deposit, and the sulphate of magnesia will crystallize from the concentrated solution.

The process is difficult, the product never so pure as that from the *magnesite*.

Dr. Henry first subjects the powdered stone to the action of dilute muriatic acid, which acts on the lime before the magnesia. The liquor should be tested from time to time, and when a little precipitates copiously by ammonia, the muriatic acid should be decanted, the powder well washed with soft water, and then dissolved by boiling dilute sulphuric acid on the plan mentioned under the first head.

Where acids are very cheap, this process, although more tedious, is the most economical of all, and affords a very pure product.

Sulphate of magnesia crystallizes in small silky prisms with rhombic faces. It is of intensely bitter taste, soluble in an equal weight of cold, and still less of hot water, inalterable by exposure to the air; on being heated it fuses, and its water of crystallization is expelled.

Composition,—

Sulphuric Acid, ...	1 eq. =	40
Magnesia, ...	1 eq. =	20
Water, ...	7 eqs. =	63
	Equivalent, =	123

The solution is precipitated by soluble carbonates, but not by bicarbonates; ammonia gives a faint cloud.

Use.—This article is very much used as a purgative. *Dose* half an ounce to one ounce dissolved in water or given in an infusion of Senna. It should not be administered during the prevalence of cholera, as it is apt to occasion too profuse and exhausting evacuations, and thus to bring on an attack of that terrible disease.

(To distinguish it from Oxalic Acid.)

Tests.—In Europe it has frequently happened that a formidable poison, oxalic acid, has been sold by mistake for this salt, and thus many lives have been lost. The resemblance of the salts in crystalline aspect has led to this deplorable result.

Dissolve in water and taste a single drop of the solution. That of oxalic acid is excessively sour, that of sulphate of magnesia bitter. The former reddens litmus paper, and precipitates lime water white.

(To distinguish Sulphate of Magnesia from Sulphate of Zinc.)

In 1836, several cases of unusual and alarming illness having occurred in Calcutta, from doses of a supposed Epsom salts, one of the specimens sent to the Editor for examination was found to consist of pure *sulphate of zinc*, (white vitriol,) a very dangerous and poisonous salt, only used as a medicine in small doses as an emetic. The specimen was labelled "*Coward's Epsom Salts*," but the label had evidently been forged.

On searching the bazars with the Police authorities, the Editor detected and seized some hundred pounds weight of this salt marked as "*Epsom Salts*." Much of it was bottled, part in chests, and a considerable quantity mixed in variable proportions with real sulphate of magnesia.

The detection is very simple. The great weight of a large sample is sufficient. For small quantities, dissolve a dessert spoonful in a wine glass full of water, and add strong water of ammonia drop by drop. The fluid will nearly gelatinize from the separation of oxide of zinc; place a little of this on a piece of red hot charcoal, and urge the heat by a bellow or blowpipe. It will become yellow and phosphoresce like the fire-fly, and the oxide will be chiefly volatilized in white fumes; what remains is yellow while hot, but on cooling, resumes its white colour.

There are many other tests, but this is sufficient.

MERCURY.

(Hydrargyri Præparata.)

MERCURY. (*Para.*) is a white, brilliant liquid metal. Sp. gr. 13.5. Symbol Hy. eq. 202, boils at 670°. It freezes

at 72° below the freezing point of water; is oxydized and dissolved by nitric acid and by boiling sulphuric acid, but not affected by muriatic acid or alkalies.

Mercury as found in commerce is usually adulterated with lead, tin and bismuth. It is best purified by the addition of some clippings of iron wire and distillation from an iron bottle, fitted with a bent gun barrel. The impurities remain, and the mercury distils over and may be condensed under water. The iron wire moderates the violence of the boiling. One of the iron bottles in which the metal is imported may be used in this process.

Mercury forms two series of compounds with oxygen, chlorine, iodine and sulphur, in which the metallic element is as one, the non-metallic element as one or two proportions.

The protoxide of mercury is black, the peroxide brick red, or orange yellow in the state of hydrate.

The *soluble proto-salts* give a black precipitate with alkalies and sulphurets; yellow with hydriodate of potash. The soluble *persalts*, yellow with all alkaline bodies except ammonia, with this white, hydriodate of potash carmine red. All solutions of mercury deposit the metal on gold or copper, if a piece of iron or zinc be brought in contact with this metal.

Mercury with Chalk.

Hydrargyrum cum Cretâ.

Mercury three ounces, prepared chalk five ounces. Triturate together till no metallic globules are perceptible when a portion is rubbed on paper with the point of the finger.

Mr. Phillips states, that a small quantity of water accelerates this very tedious operation. On repeating the process, we found the addition a great improvement. A stone or marble mortar, and pestle of very hard wood should be employed.

A small portion of the mercury is converted by the trituration into protoxide.

Use.—An excellent alterative and antacid, much used, especially in the treatment of chronic diarrhœa in young children. The dose ranges from one to ten grains according to the age of the patient. It must not be prescribed with acids, as these dissolve the chalk.

Corrosive Muriate of Mercury.

Syn: *Bi-chloride of Mercury, Corrosive Sublimate, Sublimatus corrosivus.*

Mercury four ounces, sulphuric acid two ounces and three drachms, pure nitric acid half an ounce. Mix in a porcelain vessel, dissolve by a gentle heat, evaporate to dryness.

Triturate the dry salt with common salt three ounces.

Sublime in a glass flask, half imbedded in sand which can be heated gently, so as first to expel all moisture; when this is done, place an earthen cup over the neck of the flask and heat more strongly, till the sublimate forms. Take great care to avoid the fumes. If the product be loose and flocculent, dissolve in the smallest possible quantity of boiling water, and crystallize in the usual manner.

In the first step of this process, the nitric acid gives oxygen to the mercury and forms the peroxide of mercury, M. 202, Ox. 2 = 16 = 218. With each equivalent of this two atoms of sulphuric acid combine, forming bi-persulphate of mercury. But as hot sulphuric acid is capable, although more slowly, of giving oxygen to mercury, sulphurous acid gas being evolved, the like effect takes place at the same time through its action. The nitric acid much facilitates the process, and renders the composition of the product more certain.

In the second stage, one equivalent of bi-persulphate of mercury decomposes two equivalents of chloride of sodium, (common salt,) thus—

Bi-persulphate of Mercury 298, 1 eq.	1 eq. * Mercury 202, 2 eqs. † Oxygen 16, 2 eqs. † Sulphuric Acid 80.	2 eqs. * Chlorine 72, 2 eqs. † Sodium 48.	Chloride of Sodium 120, 2 eqs.

* * Form bi-chloride of mercury, ... 274

† † † Form 2 eqs. of sulphate of soda (oxide of sodium,)... 144

This is the Edinburgh process; although superior to the London it is still difficult, and often fails in inexperienced hands.

Corrosive sublimate is white, crystalline, volatile, inodorous, excessively acrid and caustic, soluble in one-third of its weight of boiling and twenty times its weight of cold water; very soluble in alcohol, ether and muriatic acid, and in solutions of muriate of ammonia or of common salt, precipitated yellow by potash, soda and lime, white by ammonia, carmine red with a beautiful play of yellow and crimson by ioduret of potassium.

Corrosive sublimate is a violent acrid poison, causing besides the ordinary symptoms of that class of poisons, profuse salivation and the other special effects of mercurial preparations, in the most ag-

gravated degree. The best antidote is the white of egg in the liquid state, several of these should be swallowed at once, and free vomiting excited.

In *Medicine*, corrosive sublimate is used in very minute doses, 1-8th to 1-4th of a grain, in the treatment of secondary syphilis and lepra.

Corrosive sublimate is much used as a preservative of timber, canvas, &c. from the ravages of mildew, the dry rot and of white ants. A solution is made in the proportion of one pound to four gallons of water, and in this the article to be protected is steeped for a variable time according to its nature.

Calomel.

Syn: *Proto-chloride of Mercury, mild Chloride of Mercury, Sub-murias Hydrargyri, &c.*

Prepare the bi-persulphate of mercury as above directed. Add mercury four ounces, common salt three ounces; triturate well together till the mercurial globules entirely disappear. Sublime in a flask heated by sand, reduce the sublimate to very fine powder, which is to be washed with distilled water till the washings are not coloured by ioduret of potassium.

In this process by doubling the quantity of mercury we deprive the bi-persulphate of one equivalent of oxygen and one of sulphuric acid, and the whole is converted into *sulphate of the protoxide of mercury.*

This being sublimed with common salt, double decomposition thus occurs—

Protosulphate of Mercury. { 1 eq. * Mercury 202, 1 eq. † Oxygen 8, 1 eq. † Sulphuric Acid 40. } { 1 eq. * Chlorine 36, 1 eq. † Sodium 24. } Chloride of Sodium.

* * Form protochloride of mercury, calomel.

† † † Form sulphate of soda, (protoxide of sodium.)

Henry's Calomel is prepared from the same materials, but the sublimed vapors are conducted into a vessel filled with steam, by which they are precipitated in exceedingly fine powder.

Calomel may also be made by *precipitating* a solution of any *protosalt* of mercury by muriate of soda. We do not insert any

process of this kind, as the product is invariably contaminated by the presence of the di-pernitrate or di-persulphate of mercury, and thus rendered dangerous and uncertain for medical use.

Calomel as met with in commerce is a white heavy powder. It sometimes occurs in large crystalline cakes. It is inodorous, tasteless, perfectly insoluble in water, alcohol or ether; decomposed by the alkalies, converted by chlorine or nitric acid into corrosive sublimate, also decomposed by sulphurets; volatilized by heating, lime water and the fixed alkalies decompose and blacken it—Composition, Chlorine 1eq 36. mercury 1eq. 202=238.—

Use and effects.—These vary according to the dose; one to two grains given twice or thrice daily, especially if combined with opium, causes increased secretion, soon occasions tenderness of the gums, and lastly determines copious continued salivation. If the administration of calomel be persisted in beyond this point, ulceration and gangrene of the mouth and salivary glands may take place.

A single dose of five to ten grains is purgative, and tends especially to excite the action of the liver. Such a dose is generally given at night, and followed the next morning by a saline cathartic, to prevent the effects of the mercury on the system generally.

In doses of twenty grains it is deemed by many practitioners to possess decided sedative powers in allaying irritation and inflammation of the alimentary canal, and for this purpose these large doses are frequently given in cholera and dysentery, by many experienced practitioners.

Calomel in very small doses tends strongly to promote absorption, and is thus given in dropsies, in enlargement of the viscera, (in that of the spleen it is prejudicial), in deposits of lymph within the chambers of the eye, &c. &c.

Besides these effects, the establishment of the mercurial action in the system is by many deemed incompatible with the existence of ardent fever, and a powerful mode of combating inflammatory and rheumatic action.

Lastly, in syphilis, in most of the forms of that malady. Calomel in common with other mercurial-preparations possesses unequivocal and specific virtues; there can be no doubt, however, that other measures and remedies are also capable of curing this disease.

In spleen, scrofula and scurvy, it is held by the best authorities that the administration of mercury is likely to be attended with bad results.

It is a remarkable fact, that comparatively larger doses of calomel may be given to young children than to persons of adult age. In infantile diarrhœa and fever it will be often found, that a grain of calomel with a little prepared chalk will prove of great benefit. But the dose must not be repeated more than twice without the bowels being freely acted upon, otherwise ulceration of the mouth is very apt to take place.

The natives of India have long been in the habit of preparing a mixture of the two chlorides of mercury. We extract a notice of the details of the process from the Editor's "*Manual of Chemistry*," (*2d edition, p. 287.*)

INDIAN MERCURIAL PREPARATIONS.

Several preparations of mercury have been described by the Sanskrit and Tamul writers, especially in the "*Purana Sastram*," a work on materia medica and religious observances. The processes I have examined generally lead to the production of a mixture of calomel and corrosive sublimate, and accordingly the analysis of all the bazar preparations I can collect, shews their composition to be a mixture of varying proportions of these substances.

The *Raskarpûr* is generally considered to be corrosive sublimate, but on analysis I find that it is usually *calomel*. Once, however, I met a specimen which was corrosive sublimate of the finest kind. The cause of the uncertainty is to be traced in the different proportions of the ingredients recommended by different native writers, and which of course must lead to the results described.

I insert from Dr. Ainslie's work, an account of the preparation of the *Rassapuspum* and the *Shavirum*, a compound similar to the *Raskarpûr*.

RASSAPUSPUM.

"This is a sort of muriate of mercury, in great repute amongst the Tamuls, and which appears to be administered by them in larger doses than any other preparations of this metal. The following is taken from '*Aghastier Vytiah Anyouroo*:'—'Twelve pagodas weight of sulphur is to be put into an earthen pot, and fused over a slow, but strong fire: when in a state of fusion, eighty pagodas weight of quicksilver must be added to it, and kept gently stirred till the whole is reduced to a black powder: another pot is then to be taken, and filled half full of small pieces of brick, over which is to be laid one measure of common salt: on the top of this salt is to be put the black powder just mentioned; covering the whole with another earthen vessel; the part where the mouths of the two vessels meet is to be well coated over with soft clay, and afterwards bound round with five plies of coarse cloth; the pots, thus joined, are then to be placed on a strong fire, and there to be kept for twelve hours; after which time they are to be taken off and left to cool, when the *rassapuspum* will be found collected in the uppermost.'"

Here we have a bisulphuret of silver first formed, which decomposes the chloride of sodium and forms bi-chloride of mercury. It is very remarkable that the quantities employed are nearly in strict accordance with the indications of the atomic doctrine. Thus the atomic weight of 2 eq. of sulphur is 32, of mercury 202, or nearly in the same proportion as 12 of sulphur and 80 of mercury employed by the Indian druggist. The 2 eq. of sulphur again decompose 2 eq. of salt, liberating 2 of chlorine, which, with the mercury, produce the bi-chloride or corrosive sublimate. But it generally happens that through defective manipulation a mixture of calomel and the bi-chloride is formed.

The next extract is still more interesting:

SHAVERUM.

"This strange compound is administered by the Tamuls in very small quantities; and well it ought to be, as it is evidently a harsh, uncertain, and dangerous preparation. The following process for making it is taken from the '*Purana Sastrum*;'—First, make rassapuspum, of the strength that will be formed by using the proportions of sixteen pagodas weight of sulphur, eighty pagodas weight of quicksilver, and half a measure of common salt. Then, to eighty pagodas weight of this rassapuspum, add the same quantity of roasted salt: to these, again are to be added the following substances: forty pagodas weight of roasted turushu (sulphate of copper), twenty pagodas weight of paddicarum (alum), twenty pagodas weight of pottie uppu (nitre), twenty pagodas weight of punhir (a sort of alkaline earth), ten pagodas weight of anna baydie (sulphas ferri), and five pagodas weight of navacharum (sal ammoniac). All these to be well rubbed together till formed into an uniform powder, which is to be put into a cooppie sufficiently large to hold the whole in one-half of it; after which, it is to be well coated round with clay, and set over an oven like the shadilingum, where it is to be kept for thirty-six hours, taking care that the fire, though slow, is strong; the cooppie is then to be broken, and in the mouth of it will be found the shavirum, in a lump.'"

In this process, the mixed chlorides of mercury, above described, are treated so as to combine them with still more chlorine, and bring all to the state of the bi-chloride. The sulphate of copper and alum (tor-sulphate of alumina and potash), with the sulphate of iron, when heated, evolve sulphuric acid, which, decomposing the saltpetre, liberates nitric acid. The muriate of ammonia is decomposed at the same time, sulphate of ammonia being formed, and muriatic acid set free. The muriatic and nitric acids meeting in vapour, form water and evolve *chlorine*. The vapours of calomel simultaneously rising and meeting the chlorine are converted into the bi-chloride of mercury, the preparation described.

The close resemblance of this ancient method to that practised in Holland at this day is very remarkable. Indeed, were it an object to devise a process for the cheap manufacture of corrosive sublimate from the bazar materials and bazar vessels, the most accomplished chemist could make but little improvement in the sagacious though empiric formula of the Tamuls.

These precepts could only have resulted from the closest combination of observation of chemical phenomena, and of the medicinal effects of the remedies prepared. With precisely similar habits, and with all the aid of modern science, the descendants of these extraordinary men may be reasonably expected to contribute much to the progress of chemical and pharmaceutical knowledge.

Solution of Corrosive Sublimate.

Corrosive sublimate and muriate of ammonia each ten grains, distilled water a pint.

A fluid ounce contains half a grain of corrosive sublimate, the muriate of ammonia is merely added to increase the solvent power of the water.

Use and *dose* as above.

White Precipitate of Mercury.

Syn: *Hydrargyri precipitatum album, Ed.*
Hydrargyri ammonio-chloridum, Lond.

Corrosive sublimate six ounces, water six pints; dissolve by heat, allow it to cool, and add solution of ammonia eight fluid ounces. Agitate, strain, and wash the powder thrown down till it is inodorous, and does not change the colour of a solution of ioduret of potassium.

Half the chlorine is removed by the ammonia, and the precipitate is formed, according to Phillips, of —

1 eq. Peroxide of Mercury,...	218
1 eq. Bichloride of Mercury, ...	274
2 eqs. Ammonia, ...	34
Equivalent, ...	526

A light, white powder, inodorous, insipid, insoluble in water, soluble in the mineral acids, is turned yellow, and emits ammonia when heated with potash.

Use.—In ointments in cutaneous diseases.

Black Oxide of Mercury.

Hydrargyri Oxydum Nigrum.

Calomel one ounce, lime water a gallon, mix well and agitate in a large stoppered vessel. When the oxide has

subsided, pour off the liquors, wash well with distilled water, wrap the precipitate in filtering paper, and dry it in the dark on the water bath.

Considering calomel as the protochloride of mercury, in this process one equivalent of water is decomposed; its oxygen with one equivalent of mercury forms protoxide (black oxide) of mercury; its hydrogen with one equivalent of chlorine produces muriatic acid—and this with the lime forms muriate of lime.

The protoxide of mercury is black, by heat it is changed into metallic mercury. It is dissolved by the sulphuric, dilute nitric and acetic acids; and gives sulphuret and chloride containing one equivalent of the non-metallic element, when its salts are treated by sulphuretted hydrogen or chlorine.

Use.—This is the oxide contained in blue pill, mercurial ointment, the powder of mercury and chalk, and all the milder mercurial preparations.

It is sometimes, but very rarely, given internally as an alterative, in doses of one to two grains twice or thrice daily.

Red Oxide of Mercury.

Hydrargyri Oxydum Rubrum.

Mercury eight ounces, diluted nitric acid, (1,280), five fluid ounces. Dissolve half the mercury with the acid by a moderate heat, and continue this till a dry salt is procured.

Triturate the salt with the rest of the mercury to a fine powder, and heat in a porcelain capsule till acid fumes cease to be evolved.

Or, mercury any quantity, nitric acid half its weight, distilled water two pints to every three lbs. of mercury. Mix, dissolve by heat, and evaporate to dryness. Powder the residue, and strew the powder on a shallow earthen vessel kept hot, until there be no brown fumes perceptible.

In both these processes mercury is oxidized to the maximum by the nitric acid which undergoes decomposition, brown fumes of nitrous acid being generated. Pernitrate of mercury is formed, and the entire of the nitric acid is subsequently expelled by heat.

The product is bright red and crystalline. It sometimes contains a little undecomposed nitrate of mercury.

The peroxide of mercury may also be prepared by decomposing any soluble persalt of mercury by potash, soda, or their carbonates, or by lime water.

The London binoxide of mercury is a preparation of this kind, made by decomposing four ounces of corrosive sublimate in six pints of water, by twenty-eight fluid ounces of solution of potash.

This preparation is never employed internally, and is only used for preparing bi-cyanuret of mercury with Prussian blue.

Use.—It is only used externally as a caustic and escharotic powder, and in the ointment which bears its name.

Bi-cyanide of Mercury.

Hydrargyri Bi-cyanidum.

Prussian blue eight ounces, finely powdered red oxide of mercury ten ounces, distilled water four pints; strain, evaporate till crystals form. Wash the residue well, and concentrate the washings to crystallization.

Prussian blue is a compound of

Nine eqs. of Cyanogen, ...	26. × 9 =	234
Seven eqs. Iron, ...	28. × 7 =	196
		430

Cyanogen is a compound gas, containing

Carbon, ...	2 eqs. = 6 × 2 =	12
Nitrogen, ...	1 eq. = 14	14
		26

Prussian blue is prepared by adding the ferrocyanuret of potassium to a solution of any per-salt of iron.

In the above process two equivalents of cyanogen combine with one of mercury, and a corresponding quantity of per-oxide of iron is formed.

Properties.—Colorless, crystalline, soluble in hot water, slightly in alcohol; heat resolves it into cyanogen and mercury. The alkalies do not decompose the watery solution. The cyanide of mercury is soluble in nitric acid. The sulphuric and muriatic acids dissolve and decompose it, liberating hydrocyanic acid.

Use.—For the preparation of hydrocyanic acid.

Red Ioduret of Mercury.

Corrosive sublimate two hundred and seventy-four grains, ioduret of potassium three hundred and thirty-two grains,

distilled water two pints. Dissolve the corrosive sublimate in one pint and sixteen ounces of the water, the ioduret of potassium in four fluid ounces. Mix and agitate well, a carmine red precipitate takes place; dissolve this in a boiling solution of muriate of soda, filter while hot through calico, and collect the dry crystals which form on cooling.

In this process two equivalents of ioduret of potassium decompose one equivalent of corrosive sublimate, chloride of potassium and biniodide of the mercury being the result.

This preparation is of splendid red colour, fusible, volatile at high temperatures. When heated it becomes yellow, but regains its red colour on cooling. It is insoluble in water, but readily dissolved by hot alcohol or solution of muriate of soda from which it crystallizes on cooling.

Use.—Recommended strongly by Lugol and others for syphilitic scrofula. *Dose,* half a grain to a grain daily. It is most employed however in an *ointment,* for which a formula is given under that head.

Red Sulphuret of Mercury.

Mercury one pound, sulphur two and half ounces; melt the sulphur, add the mercury till the mixture swells up, remove the vessel quickly, and cover it with a well fitting lid, lest the mixture take fire; rub it to powder when cool, and sublime in suitable flasks.

Reduced to powder, this sublimate is identical with the vermillion of commerce. It consists of

2 = sulphur,	...	... 32
1 eq. Mercury,	...	... 202
		234

This product occurs in the bazars in crystalline masses of great purity.

It is only used for fumigations, half a drachm being placed on a hot iron.

N. B.—The *Proto-ioduret of mercury* of the London College is omitted on account of the uncertainty of the product.

The *Sulphuret of mercury with sulphur* of the same College is also omitted, from its total inertness and inutility.

POTASSIUM, *(Preparations of)*

Preparata Potassii.

POTASSIUM is the metallic base of the fixed alkali potash. It was discovered by Sir H. Davy in 1807. It is obtained by decomposing potash by iron or charcoal. Potassium is white, semi-fluid at 90°, melts at 120°; sp. gr. 0.865. It floats on water, which it decomposes so violently, that it takes fire and burns with a beautiful rose-coloured flame. It inflames even on ice; equivalent 40. It forms two oxides, of which the *protoxide* alone is of importance in Pharmacy.

The neutral salts of potash are precipitated by tartaric acid in excess. Chloride of platinum also gives a yellow precipitate. The sulphate of soda is efflorescent and soluble in its own weight of water, the sulphate of potash is permanent in the air, and requires sixteen times its weight of water for its solution. The salts of potash are not blackened by sulphuretted hydrogen.

As the carbonate of potash is the object of large trade, and affords the crude material from whence the pure pharmaceutical articles are derived, we shall treat first of the preparation of this article.

CARBONATE OF POTASH.

Pure saltpetre in fine powder two pounds, powdered charcoal one pound. Mix well together, and project the mixture by small quantities at a time into a common earthen vessel containing a piece of red-hot charcoal. Melt the salt and throw in pieces of charcoal while deflagration occurs; when the deflagration has ceased throw the mass into one gallon of water, strain and boil in a porcelain vessel, and evaporate to dryness.

Saltpetre consists of	
Nitric Acid, 1 eq., ...	54
Potash, 1 eq., ...	48
Equivalent, ...	102

The carbon forms carbonic acid with the oxygen of the nitric acid. Part of the carbonic acid is expelled, the rest unites with the potash, forming carbonate of potash.

In Europe, the commercial carbonate of potash occurs chiefly in the rough state as *potashes*, or partially refined as *pearl ash*. Both these products are obtained by the incineration of various land vegetables and trees, washing the ashes, and evaporating to dryness.

These articles contain many impurities, especially sulphurets of potassium and iron, compounds of lime, with sand, clay, &c. The value of the salt depends on the quantity of pure alkali it contains, and this is estimated by ascertaining the quantity of sulphuric acid of a given strength, which one hundred grains of the alkali under examination are sufficient to neutralize.

A very impure and useless carbonate of potash is prepared in some parts of India by the incineration of palm leaves or plantain leaves.

Crude argol, the bitartrate of potash or *cream of tartar*, deposited during the fermentation of grape juice, affords by incineration a mixture of pure carbonate of potash and charcoal. The tartaric acid contains 2 eq. oxygen, 5 eq. hydrogen, and 4 eq. carbon. During the incineration, these constituents form water and carbonic acid, the former being expelled, the latter retained with the potash. The carbonate of potash is separated from the carbon by washing with water. This is the process adopted by the Edinburgh College.

The London College direct the *pearl ash* of commerce to be refined by simple solution, straining and evaporation to dryness. This does not separate any of the numerous soluble impurities it contains, for instance, the sulphate and sulphurets of soda and salts of iron. The process we give affords a perfectly pure article.

Carbonate of potash is a compound of

Carbonic Acid, 1 eq., ...	22
Potash, 1 eq., ...	48
	70

This salt is white, inodorous, acrid, deliquescent, soluble in its own weight of water, powerfully alkaline and corrosive, insoluble in alcohol; at a red heat, it loses six per cent. of water. It crystallizes with great difficulty. The ordinary dry carbonate is combined with one and a half equivalents of water.

It is generally and erroneously called *sub*-carbonate of potash, and always sold under that name by the druggists.

Medicinal Use.—As a diuretic and antacid. *Dose*, ten to thirty grains in milk or mucilage. It is often given with citric acid in an effervescing draught, but it then ceases to act as the alkaline carbonate, as it is decomposed and neutralized by all the ordinary acids.

Solution of Carbonate of Potash.

Dissolve twenty ounces of carbonate of potash in one pint of distilled water. Preserve in green glass bottles. Sp. gr. 1.473.

Properties.—As above. *Dose*, ten minims to one fluid drachm.

Bi-carbonate of Potash.

Carbonate of potash six ounces, carbonate of ammonia three ounces and a half; mix in very fine powder and make into a pulp with a little water, dry this at a temperature not exceeding 140°, stirring occasionally until the powder is free from any ammoniacal smell.

This is the process adopted by the Edinburgh College. The carbonate of ammonia parts with its acid to the carbonate of potash, and ammonia is set free.

Composition,—

Carbonic Acid,	2 eqs.,	= 22 × 2	= 44
Potash, ...	1 eq.,	=	= 48
Water, ...	1 eq.,	=	9
			101

Properties.—Crystalline, taste not disagreeable, reaction scarcely alkaline, soluble in four times its weight of water at 60°, decomposed by boiling water. Insoluble in alcohol. It does not precipitate a solution of sulphate of magnesia until boiled.

Use.—As with preceding preparations. *Dose*, ten to thirty grains.

Remarks.—The London College prepare this compound by passing a current of carbonic acid gas through six pounds of carbonate of potash, dissolved in a gallon of water. The carbonic acid required is disengaged from a mixture of chalk and sulphuric acid. This may be made in a common earthen vessel, with a wooden stopper (luted,) and a bent leaden tube. The sulphuric acid should be added to the chalk through a similar tube provided with a leaden funnel.

Potash Water, (Effervescing.)

Bi-carbonate of potash one drachm, distilled water a pint; to be charged with carbonic acid gas under *strong pressure*, as in the process for preparing soda water.

Solution of Potash.

Carbonate of potash one pound, water ten pounds; boil briskly, and add gradually slaked lime in fine powder one pound, boiling strongly till a small portion of the clear liquor

when tested with muriatic acid does not effervesce. Bottle the liquor while hot in green glass bottles; when the precipitate has subsided, decant rapidly into other bottles of green glass. The density should be 1.063.

In this process, the lime removes the carbonic acid from the solution of carbonate of potash, setting the alkali free, carbonate of lime being deposited.

The above process is that followed in Dublin, and is preferable to the London method, the carbonate of lime being formed very rapidly in the crystalline state, and falling down as a dense powder.

The solution of potash is very powerfully alkaline and corrosive. It acts rapidly on ordinary white glass dissolving its silica; green glass it does not affect.

Use.—In medicine it is used as described under the previous head, also as a remedy in stone and gravel. *Dose,* ten to thirty minims given in milk, broth, or beer free from acidity.

Caustic Potash.

Solution of potash a gallon, evaporate rapidly from an iron or silver vessel, till the whole of the water is expelled, and the potash melts. When this takes place, it should be cast into moulds of brass or iron.

This is a compound of 1 eq. potash and 1 eq. water = 57. As sold by the Apothecaries it is brownish white, very deliquescent, and contains much oxide of iron. It is a very energetic caustic, destroying every tissue with which it is brought into contact, soluble in its own weight of water, also soluble in alcohol, by which it can be separated from the usual impurities, and obtained in a pure state.

Use.—As a caustic externally, but it is now so little employed that the Edinburgh College have expelled it from their list of preparations. The chief objection to its use is its extreme deliquescence, causing it to dissolve and flow beyond the part to which its action should be restricted.

Potash with Lime.

Caustic potash and lime equal weights, rub well together, and preserve in glass bottles.

The addition of the lime is to moderate the action of the potash. This preparation is also omitted from the Edinburgh Pharmacopœia.

Acetate of Potash.

Pyroligneous acetic acid a pint and a half, dry carbonate of potash seven ounces, or the quantity requisite for neutralization. Evaporate till on cooling it becomes a concrete mass, which is to be preserved in stoppered bottles.

The carbonic acid is expelled with effervesence, and acetate of potash formed.

Composition,—

1 eq. Acetic Acid, ...	51
1 eq. Potash,...	48
	99

This salt is white, crystalline, of pungent taste, deliquescent, soluble in water and alcohol. At a red heat it is changed into carbonate of potash.

Use.—Diuretic in doses of ℈i. to ʒj. Cathartic in doses of ʒii. to ʒsse. It is given in solution in water.

Sulphate of Potash.

Bisulphate of potash* two pounds.

Ignite in a crucible till all the excess of sulphuric acid is expelled, then dissolve in two gallons of water, concentrate to crystallization.

Or, neutralize a solution of the bisulphate of potassa with carbonate of potassa, strain if necessary, and crystallize.

Composition,—

Sulphuric Acid, 1 eq.	40
Potash, 1 eq.	48
	88

The sulphate of potash is usually in bi-pyramidal crystals, colourless, bitter, soluble in sixteen times its weight of water at 60°, insoluble in alcohol, is not efflorescent, has no water of crystallization, and therefore does not melt on being heated below redness.

It is seldom or never prescribed unless in conjunction with other remedies. Owing to the great hardness of its particles, it is used in powder as a constituent of *Dover's Powder*, being employed to render the subdivision of the opium and ipecacuanha more minute.

* Or the salt which remains after the distillation of nitric acid by sulphuric acid.

Bi-sulphate of Potash.

The residue of the distillation of nitric acid two pounds, sulphuric acid seven fluid ounces and one drachm, and boiling water six pints. Dissolve, mix, and concentrate to crystallization.

The addition of the acid is intended to prevent the deposition of any sulphate containing less than two equivalents of acid to one of potash.

This salt occurs in tabular crystals with bevelled edges, very acid and bitter, soluble in water.

Composition,—

Sulphuric Acid, 2 eq.	80
Potash, 1 eq.	48
Water, 2 eq.	9
Equivalent, ...	137.

Use.—Given with other purgatives in doses of from twenty grains to one drachm.

Tartrate of Potash.

Bi-tartrate of potash three pounds, carbonate of potash sixteen ounces, boiling water six pints; dissolve the carbonate in the water, then add the bi-tartrate and boil, strain and concentrate to crystallization. The product should be neutral to test paper.

Bi-tartrate of Potash is composed of two equivalents of tartaric acid and one of potash. In this process the second equivalent is neutralized by potash, and the result is two equivalents of the neutral tartrate of that base.

Tartaric Acid, 1 eq.,...	66
Potash, 1 eq., ...	48
Equivalent,...	114

This salt is bitter, soluble in twice its weight of water, deliquescent in damp air, insoluble in alcohol; by a red heat it is changed into carbonate of potash.

Use.—It affords a valuable purgative in doses of from ʒi. to ʒsse. in solution. It is much used with senna, under the idea that it prevents the griping usually produced by this purgative.

Bi-tartrate of Potash.

Cream of Tartar.

In Europe this salt is formed incidentally in large quantities during the manufacture of wine, being deposited from the grape juice during its fermentation. It is usually of a reddish colour, and in the impure state, is called *argol* in commerce. It is chiefly manufactured in the South of France, at Teneriffe, and the Cape of Good Hope. Being of considerable utility in dyeing, it finds a very ready market; indeed the supply is scarcely equal to the demand.

The *crude argol* is purified by boiling with albuminous fluids, which coagulate and involve the red colouring particles and other impurities which are removed by skimming from the mixture. The refined article is called *cream of tartar*, which besides its commercial value, is a very useful remedy.

There being no wine manufacture in India, we made many attempts, but ineffectually, to obtain this substance from the juice of the wild grape, and even from the cultivated kind. But we have succeeded in obtaining it economically from a much more available source, the leaves of the tamarind tree, by the followimg process.

Tamarind leaves, dried before the sun or in the stove, and rubbed to coarse powder, one pound. Divide into two portions and boil each separately in porcelain vessels in a quart of water, stirring constantly for twenty minutes; strain while hot and press. To the hot liquor of one, add solution of carbonate of potash to neutralization; strain if necessary; now mix the contents of both vessels and boil for ten minutes or a quarter of an hour, with a little moist white clay free from lime. Strain while hot, and set aside for crystallization.

The proportions above indicated may be observed on any scale. The product will by proper management amount to half an ounce of pure cream of tartar for every pound of the dried leaves.

Bi-tartrate of potash occurs in white hard crystals, of acid taste, soluble in 60 parts of cold and 15 of boiling water. Heated to redness, it is changed into carbonate of potash.

Composition,—

Tartaric Acid, 2 eqs.,	... ...	66 × 2 = 132
Potash, 1 eq.,	... ...	48
Water, 1 eq.,	... ...	9
		189

Use.—Dissolved in water, the solution sweetened, and a little lemon peel added, it makes an excellent drink for fever patients. It promotes the action of jalap and scammony, and is accordingly added to these powders in their ordinary form of administration.

Tartrate of Potash and Soda.

Bi-tartrate of potash sixteen ounces, carbonate of soda twelve ounces, boiling water four pints; conduct the process as in that for the neutral tartrate of potash.

The product is the well known *Rochelle Salt.*

Composition,—

Tartrate of Potash, 1 eq.,	... ...	114
Tartrate of Soda, 1 eq.,	... ...	98
Water, 8 eqs.,...	... ...	72
	Equivalent,	... 284

In large and beautiful crystals, soluble in five times their weight of water at 60°.

Use.—A popular aperient, ʒii. to ʒiv. being usually dissolved with half a drachm of carbonate of soda in six to eight ounces of water. A solution of half a drachm of tartaric acid is added, and the mixture taken while in effervescence.

Nitrate of Potash.

Saltpetre, Shora, Nitras Potassæ.

This article occurs in the bazars in Bengal, in the refined state, (*see Materia Medica, Nitrate of Potash.*)

Saltpetre crystallizes in six-sided prisms, soluble in 7 parts of water at 60°, and in less than its own weight of water at 212°, insoluble in alcohol, taste cool, sharp, slightly bitter. At a red heat it

melts, evolves oxygen and nitric oxide, and leaves the peroxide of potassium.

Nitrate of Potash is composed of

Nitric Acid, ...	1 eq.	= 54.15
Potash, ...	1 eq.	= 47.15
Equivalent, ...		101.30

Pharmaceutical use, for preparation of nitric acid.

Medical use.—The only really valuable or certain effect of nitre in medicine, is that it produces as a diuretic, and for this purpose it is very inferior to the acetate of the same alkali. *Dose*, two scruples to one drachm in solution with syrup and cinnamon water. In large doses, nitre is an acrid irritant poison.

Bromide of Potassium.

Bromine two ounces, carbonate of potash two ounces and one drachm, fine iron filings one ounce, water three pints; pour half the water on the iron filings, which must be thoroughly clean, then add the bromine. Let the mixture rest for two hours in a stoppered bottle, occasionally agitating it. Then immerse the bottle in warm water occasionally renewed till the mixture becomes greenish. Then add the carbonate of potash dissolved in the rest of the water. Strain, wash the residue with two pints of boiling water, and strain again. Mix the liquors and crystallize.

This is the London process for the preparation of this bromide now introduced into medicine as a remedy in enlarged spleen.

The theory of the preparation is exactly the same as that of the next process for the ioduret of potassium.

For the properties of Bromine and its mode of preparation, see that head.

Properties.—In white cubical or quadrangular crystals, inodorous, anhydrous, of pungent taste, very soluble in water, and slightly in alcohol.

Composition,—

Bromine, 1 eq., ...	78
Potassium, 1 eq., ...	40
Equivalent, ...	118

Use.—In enlarged spleen. *Dose*, three to ten grains thrice daily. Its effects are not warranted by experience, but it is a remedy of much promise.

Iodide of Potassium.

Iodine (dry) five ounces, fine iron wire three ounces, water four pints, prepare with these materials the solution of *ioduret of iron* directed under that head; add while hot, carbonate of potash two ounces and six drachms previously dissolved in a little water, filter while hot, wash with distilled water, unite the liquids, concentrate by deposition till a dry salt is obtained.

Boil this in twice its weight of rectified spirit, filter and crystallize.

In this process ioduret of iron is decomposed by carbonate of potash thus—

Iodine,† * Carbonic Acid,
Iron,* * Oxygen.
† Potassium.
* Carbonate of Iron. † † Ioduret of Potassium.

The iodide of potassium occurs in colourless cubical crystals, anhydrous; soluble in its own weight of water at 90°, very soluble in rectified spirit, is not decomposed by a very high heat.

Composition,—

Iodine, 1 eq.	126
Potassium, 1 eq.	40
Equivalent, ..	166

Use.—In scrofula and secondary syphilis it is given with great advantage in ten grain doses thrice daily. In chronic rheumatism it is also most beneficially employed in the same doses, especially when dissolved in the infusion of the hemidesmus, (*ununtamool.*) Much larger doses may be taken with no more marked effect than copious diuresis. This salt rapidly pasess by the urine, in which it may be detected by starch and sulphuric acid, which strike a blue colour. Iodide of potassium in solution dissolves iodine, and gives the best vehicle for administering that remedy, as in the subjoined formula.

Solution of Iodureted Iodide of Potassium.

Iodide of potassium ten grains, iodine five grains, and water a pint. Dissolve.

The solution is brown, gives a blue colour with starch. *Use,* in cases above cited. *Dose,* half an ounce to one ounce diluted with water.

Sulphuret of Potassium.

Sulphur one ounce and carbonate of potash four ounces. Mix well and melt in a crucible, till they unite ; break the mass into fragments, and preserve in stoppered bottles.

(For the properties of Sulphur, see that head.)

During this process the carbonic acid is expelled, a small portion of sulphate of potash is formed, and the greater part of the mass becomes sulphuret of potassium.

Composition,—

Sulphuret of Potassium, ...	3 eqs.	=	168
Sulphate of Potash, ...	1 eq.	=	88
Equivalent, ..			256

This preparation, from its colour, was formerly called *Liver of Sulphur*. When moistened it smells of sulphuretted hydrogen, it is soluble in water, taste acrid. It absorbs oxygen readily from the air, and passes into sulphate of potash. With many metallic solutions it forms insoluble sulphurets, and hence has been much used as an antidote to several metallic poisons. It is, however, a powerful poison itself, and can only be administered with safety where no doubt exists of the nature of the poison taken, and of its actual presence in the alimentary canal. The use of the stomach pump and of emetics will usually render the employment of this substance superfluous.

It is very seldom given internally. Externally it is employed in lotions and baths in several cutaneous diseases. It enters into the composition of some artificial sulphureous mineral waters.

SILVER, (*Preparations of*)

Argenti Præparata.

Silver when pure, is white, brilliant, soft, exceedingly ductile and malleable, melts below a white heat, sp. gr. 10,51. symbol *Arg*. Equivalent, hydrogen scale 108, oxygen scale 1351.6. In the Company's rupees, silver is alloyed with one-twelfth of copper. The sycee silver of China contains traces of gold.

Silver is violently acted upon by nitric acid. Muriatic acid if devoid of free chlorine scarcely affects it. Hot sulphuric acid oxydizes

and dissolves it. The ordinary salts of silver are transparent and colorless, their solution if mixed with organic matter darkens rapidly on exposure to the solar ray, and a black powder falls containing reduced silver. The oxides and oxysalts of silver are reduced by a red heat. The chloride and sulphuret of silver are also easily reduced by carbonate of potash or soda, at a bright red heat.

The oxysalts of silver in solution are reduced to the metallic state by plates of copper, zinc or iron; the silver being deposited in a fine crystalline powder on the reducing metal.

Nitrate of Silver.

Nitras Argenti, Lunar Caustic.

Take of refined silver an ounce and a half, beat out into a thin plate, cut four rupees' weight of this into strips and dissolve with a gentle heat in *pure* nitric acid one fluid ounce, distilled water two fluid ounces; continue the heat to dryness and melt the salt in a porcelain crucible; the heat must not be carried beyond the melting point; when melted, cast it into iron moulds previously and slightly greased with tallow or suet. Wrap the product in paper, and preserve in stoppered glass vessels.

To refine silver for this preparation, may be done by either of the two following processes:—

Dissolve rupees or currency silver in dilute nitric acid, dilute the solution with distilled water, introduce a slip of polished copper. Remove the silver deposited from time to time, and throw it into a vessel of distilled water slightly acidulated with sulphuric acid, wash it well with distilled water, and dry the precipitate. A rupee should yield 165 grains of pure silver to this process.

Or, dissolve as above, and add a solution of common salt in excess, chloride of silver is precipitated; filter on calico, wash with distilled water, dry and mix with twice its weight of equal parts of carbonate of soda and carbonate of potash. Melt in an iron cup at a bright red heat. On cooling the

refined metal is found in a button at the bottom of the crucible; it should be washed with a little acidulated water and beaten into a thin plate.

Composition.—Nitrate of silver is a compound of

One eq. Nitric Acid, (N. O. 5,)	54
One eq. Oxide of Silver, (Arg. 0,)...	116
	170

One hundred parts of the fused salt contain 31.76, metallic silver. Nitrate of silver is soluble in its own weight of water at 60°. If the solution be slowly concentrated, large crystals are deposited, the essential form of which is the *right rhombic prism.* They are not deliquescent, and not altered by light; they readily melt at a gentle heat, and cool in a white radiated mass. At a red heat, nitrate of silver evolves oxygen, nitric oxide, and nitrous acid, and the metal remains.

The watery solution of nitrate of silver is precipitated by all natural waters except the purest rain water, by all alkaline solutions, soluble muriates, sulphates, carbonates, phosphates, acetates tartrates and sulphurets, by astringent and albuminous fluids. The chloride of silver is white, blackens rapidly on exposure to the air and light, is soluble in caustic ammonia, and insoluble in nitric acid.

Use.—Nitrate of silver is the best caustic we possess; one of the fused cylinders is scraped to a point, moistened, and the part we wish to affect, touched to the extent we desire. On exposure to light, the cauterized parts are intensely blackened. A wash of nitrate of silver, four grains to the ounce, is much used in the treatment of many affections of the eye, and also as an application to chancres and indolent sores.

Internally, it is given as an antispasmodic tonic; especially in epilepsy, when there is no indication of plethoric or inflammatory action or organic disease. *Dose*, one-eighth of a grain gradually increased to a grain, made into a pill with crumb of bread and a little sugar. The pills should be given at as long an interval as possible from the usual meals, in order to avoid decomposition by the salt these contain.

The internal administration of the salts of silver is in fair skinned persons often followed by the change of colour of the skin, especially where exposed to the light, to a deep brown or purplish colour.

SODIUM, (*Preparations of*)

Sodium is the metallic basis of the valuable alkali soda, (oxide of sodium), of common salt, (chloride of sodium), of

the sulphate of soda, extracted in India from the earth called *kari noon*, of carbonate of soda obtained from the mineral *saji mati*, &c.

Sodium is silver-like in aspect, sp. gr. 972. It is obtained by processes similar to those for potassium. It decomposes water very rapidly, solution of soda being formed. Eq. 24, symbol Na. from the Greek *Natron*.

Carbonate of Soda.

The mineral called *saji mati* any quantity, heat it in lumps to low redness for an hour, and then throw the lumps into water. Those which do not fall to pieces are to be taken out and crushed, and returned to the water. Strain through cloth, and continue washing the earth till a portion of the washings does not effervesce when mixed with a little acid.

Evaporate the washings rapidly till a pellicle forms on the surface, and then set aside to crystallize.

The process ought to be performed during the cold season, and the crystallization done at night.

The mother liquors should be again concentrated, and will yield fresh crystals.

Saji mati is a mineral which exists in immense quantities in many parts of Bengal, especially in the districts of Monghyr, Purnea, and Cawnpore. It contains from 40 to 50 per 100 of carbonate of soda, traces of sulphate of soda, organic matter, clay, sand, and oxide of iron.

The salts can be extracted by washing the mineral without incineration, but the organic matter is dissolved at the same time, and gives a deep brown solution from which pure crystals cannot be obtained. The firing destroys this substance, and then the solution is colorless. But care must be taken not to push the heat beyond low redness, for the alkali at a higher temperature combines with the sand and clay, and the whole runs into green glass, insoluble in water.

Carbonate of soda is composed of

Carbonic Acid, one eq., ...	22
Soda, one eq., ...	32
Water, ten eqs., ...	90
Equivalent, ...	144

In Europe this salt is prepared either by burning sea weeds and lixiviating the ashes, the product being termed *kelp* and *barilla*, or by decomposing common salt by sulphuric acid and then roasting the resulting sulphate with chalk, saw dust, and fragments of iron. The mass when washed gives the carbonate of soda.

The article prepared by the process we have adopted is of greater purity than any met with in commerce, and equal to the refined carbonate of soda of the druggist. It occurs in colorless crystals, highly alkaline, soluble in twice their weight of water at 60°.

Uses.—The same as those of carbonate of potash, to which it is universally preferred from the greater mildness of its action, and its more agreeable flavour. *Dose*, ten to thirty grains three times a day. It is very much used in effervescent draughts, with the citric or tartaric acid, thirty grains of each being separately dissolved in three or four ounces of water, and the mixture taken while effervescing.

Dried Carbonate of Soda.

Sodæ Carbonas Siccata.

Carbonate of soda one pound, heat it in a porcelain vessel till dried, then heat it to redness, and rub it to powder and preserve in stoppered vessels.

In this process the water of crystallization is expelled—144 parts are equal to 54 of anhydrous salt.

Dose.—Five to fifteen grains, given with other remedies.

Bi-carbonate of Soda.

Carbonate of soda seven pounds, water a gallon. Dissolve and pass carbonic acid through the solution from any appropriate apparatus.

Being less soluble than the carbonate, this salt crystallizes as fast as it is formed.

A very elegant process is given in the Edinburgh Pharmacopœia, which we have found to answer perfectly. It consists in disengaging carbonic acid under pressure in an extemporaneous gasometer, and bringing the gas into contact with a mixture of one part of common carbonate of soda, and two parts of dried carbonate of soda powdered and well mixed together.

The *common* carbonate affords the water required. We give a sufficient description of the arrangement: a glass wall-shade inserted answers very well for the first vessel, the tubes being of lead, half an inch in diameter inserted as good corks.

1. A glass vessel filled with fragments of chalk or marble, the open end having a piece of coarse canvas, gunny cloth or net, tied round it to keep the marble in its place, is placed in a copper or tinned iron jar, the inside of which is to be protected by hard cement or lac varnish. Muriatic acid is poured into this vessel one-third of its depth; this acts on the chalk and expels its carbonic through the bent tube.

This is led into a wide-mouthed bottle, No 2, having a second tube issuing from it; this bottle is intended to receive any portion of the contents of No. 1, which might bubble over.

No. 3, is a smaller vessel with two openings, the tube from 2 passes to the bottom of 3, which is then filled with the Soda powder, and the second opening corked after the action has commenced between the acid and carbonate of lime. No. 3 may be made of tin plate or copper. After twenty-four hours, remove the damp salt and dry it at 110°.

Composition,—

Carbonic Acid, 2 eqs. ..	22 × 2 = ..	44
Soda, 1 eq.	.. ..	32
Water, 1 eq.	... .	9
	Equivalent, ..	85

It is distinguished from the carbonate by its not precipitating a solution of sulphate of magnesia till heat is applied.

Use.—In effervescing powders, as before pointed out.

Sulphate of Soda.

Sodæ Sulphas, or Khari Noon.

Bazar *khari noon* any quantity. Dissolve in boiling water, strain through cloth, boil down to the formation of a pellicle, and crystallize.

Khari noon is an impure sulphate of soda extracted from an earth in which the salt exists in the proportion of from ten to fifty per 100. It is prepared in large quantities by simply washing the earth.

It is usually sold in crystalline dirty-brown masses. These are purified by the simple process above described.

Sulphate of soda is very bitter, efflorescent, 3 parts of water at 60° dissolve one of this salt, boiling water dissolves its own weight.

Insoluble in alcohol. At 212° its water of crystallization dissolves it. At a higher heat, it dries altogether, and a red heat melts.

Composition,—

Sulphuric Acid, one eq., ...	40
Soda, one eq., ...	32
Water, ten eqs., ...	90
Equivalent, ...	162

Use.—A brisk cathartic. *Dose*, two drachms to half an ounce and upwards.

Effervescing Solution of Soda.

Sesqui-carbonate of soda a drachm, distilled water a pint, dissolve. Force carbonic acid into the solution, and preserve in well-corked bottles.

This is the common soda water; of course it is never prepared on this small scale, large condensing machines being employed, and correspondingly large quantities of the materials used.

Solution of Chlorinated Soda.

Liquor Sodæ Chlorinatæ.

Carbonate of soda one pound, water forty fluid ounces; dissolve and pass through the solution the chlorine gas evolved from peroxide of manganese three ounces, common salt four ounces, sulphuric acid four ounces.

This mixture may be placed in a leaden retort and gradually heated, the gas should first be passed through five ounces of water in an interposed bottle.

For details as to the preparation and evolution of *Chlorine*, see that head.

This solution is the celebrated *Labarraque's Disinfecting Liquid.* It contains chlorous acid and carbonate of soda. The colour of the liquid is pale yellow, smell that of diluted chlorine; it bleaches powerfully, and is used in fumigation, and for destroying the smell of decaying animal matters.

Muriate of Soda.

Syn. *Chloride of Sodium, Common Salt.*

Dissolve common salt in boiling water till no more is taken up, then boil briskly, and as fast as crystals form on the surface remove these and press them in filtering paper.

Common Salt is composed of,—

Chlorine, one eq., ...	35.42
Sodium, one eq., ...	24
Equivalent, ...	59.42

The usual impurity of common salt in Bengal is sulphate of soda which, by the process above mentioned, remains in solution while the salt crystallizes. Common salt is equally soluble in hot and cold water, while sulphate of soda increases much in solubility on its solution being boiled.

Use.—A table spoonful dissolved in water acts as a speedy emetic. It is employed in Pharmacy, chiefly in preparing muriatic acid and the chlorides of mercury.

Borax.

Bi-borate of Soda, Sohaga.

Take of bazar sohaga one pound, water three pints, quicklime one drachm, boil, strain through cloth and crystallize.

Sohaga is brought to the Bengal bazars from Thibet, Assam and Nipal. It is readily purified by simple solution and crystallization, as above directed. The lime is added to remove a little oily matter with which it is often associated.

Refined borax contains—

Boracic Acid, two eqs.	68 × 2 = 136
Soda, one eq.	32
Water ten eqs.	90
Equivalent, ...	258

Borax is soluble in 12 parts cold and 2 of boiling water; melts in its water of crystallization, and effervesces much; and if the heat be continued, fuses into a glass.

Borax is sometimes adulterated with alum and common salt. Ammonia gives a white precipitate (alumina) if the former, nitrate of silver a white precipitate, if the latter be present.

Use.—With cream of tartar, borax forms a very soluble mixture; with honey it constitutes the honey of borax of the Pharmacopœia, a useful application in apthous ulcerations.

Phosphate of Soda.

Bones burned to whiteness ten lbs. sulphuric acid two pints and four fluid ounces; powder the bones and mix with the acid, add six pints of water, digest for three days, adding water as required. Then add six pints more boiling water and strain through cloth; wash, strain again, concentrate all the liquors to six pints, boil the clear liquor, and add carbonate of soda to exact neutralization, crystallize and keep the crystals in stoppered phials.

Bones are composed chiefly of gelatine and phosphate of lime, the former is burned off. The residue when acted upon by sulphuric acid, yields to it half its lime which forms insoluble sulphate of lime, while bi-phospate of lime is dissolved. On neutralizing this with carbonate of soda, phosphate of lime (one eq.) subsides, and one eq. of phosphate of soda remains in solution.

Composition,—

Phosphoric Acid, one eq.	...	36
Soda, eq.	...	32
Water.	12. 5 eq. =	112.5
Equivalent,	...	180.5

The salt is slightly efflorescent and alkaline, of nearly pure saline taste. It is a valuable aperient for children, to whom, from its slight taste, it is easily administered. *Dose*, one to four drachms. It is also used as a test for magnesia.

ZINC, (*Preparations of*)

Zinc is a well known metal, brilliant, bluish-white, melts at 773, is volatilized at a full red heat, and its vapour burns with a fine white flame. Symbol Zn. equivalent 32.3, hydrogen, or 403.2, oxygen scale. It is rapidly oxidized and dissolved by the dilute mineral acids. There are two oxides, the sub-oxide and protoxide; the latter is formed when zinc is exposed to a red heat in contact with air. This oxide is yellow when hot, but of a pure white on cooling; it constitutes the base of the zinc salts. These are precipitated white

by alkalies, the deposit being soluble in excess of the reagent; white by hydrosulphuret of ammonia from neutral solutions.

There is a natural sulphuret of zinc *(zinc blende)*, and two natural carbonates *(calamine,)* one containing silicic acid.

Sulphate of Zinc.

Dissolve pieces of zinc in dilute sulphuric acid till a neutral solution is obtained, filter and evaporate to crystallization.

Oxide of Zinc.

Sulphate of zinc twelve ounces, dissolve in two pints of water, and add carbonate of ammonia six ounces; collect the precipitate, wash, press and dry it, and heat it to redness for two hours.

In the first of these processes water is decomposed, its hydrogen escapes, and its oxygen unites with the zinc. The oxide of zinc combines with the sulphuric acid, and forms sulphate of zinc.

Composition,—

Sulphuric Acid, one eq., ...	40
Oxide of Zinc, one eq., ...	40
Water, seven eqs., ...	63
Equivalent, ..	143

Sulphate of zinc resembles the sulphate of magnesia very closely in appearance, and is distinguished by the tests pointed out under that head. It is soluble in two and a half parts of cold, in an equal weight of hot water, insoluble in spirit, of excessively nauseous astringent taste.

Use.—Chiefly as an emetic, given in doses of from ten to thirty grains in eight ounces of water in cases of poisoning. A very dilute solution (ten drachms to eight fluid ounces) is found to be a useful astringent wash.

Oxide of Zinc.—In the formula for this preparation, sulphate of zinc and carbonate of ammonia naturally decompose each other, carbonate of zinc being thrown down, and sulphate of ammonia formed. This is removed by washing, and on heating the carbonate of zinc to redness, the carbonic acid is expelled.

Composition,—

Zinc, ...	32
Oxygen, ...	8
Equivalent, ..	40

White while cold, yellow on being heated, dissolves in acids, forming the zinc salts.

Use.—Tonic and astringent, given internally chiefly in chronic dysenteries. *Dose*, one to four grains thrice daily in pills; it is also used in an astringent ointment.

Prepared Calamine.

Calcine calamine ore, and then reduce it to very fine powder, as directed for prepared chalk.

Calamine is a native carbonate of zinc, containing also oxide of iron, clay, and other impurities.

Use.—The fine powder is used to prevent or allay the irritation of excoriations, and is also used in the well known calamine cerate.

The Edinburgh College have omitted this substance from their last Pharmacopœia, using the *oxide* instead.

Chloride of Zinc.

Dissolve metallic zinc in dilute muriatic acid (free from iron) till a neutral solution is obtained, strain if requisite, and evaporate to dryness; melt the residue in a porcelain crucible, and pour it on a slab, and divide the mass into small portions, which must be carefully preserved in a stoppered bottle.

In this process water is decomposed, hydrogen escapes, and muriate of the oxide of zinc is formed in solution; on evaporating this to dryness, the hydrogen of the acid and oxygen of the oxide are evolved as water, and chloride of zinc remains.

Chloride of zinc is a whitish brown substance, excessively delequescent.

Composition,—

Chlorine, ...	36
Zinc, ...	32
Equivalent, ..	68

Use.—Made into a paste with variable proportions of finely powdered clay or plaster of Paris, it has been very strongly recommended as an irritating external application in schirrous sores or tumors. The paste is applied for a day or longer, when it is stated that inflammation of the healthy tissues beneath the schirrous part occurs, leading to suppuration, and the separation of the diseased structure.

We have seen it to occasion precisely this effect in one very remarkable instance. The paste applied consisted of one drachm of chloride of zinc, with three of plaster of Paris. Fine white clay answers just as well, and is more easily procurable in Bengal. Its use is to moderate the action of the chloride, and to prevent its spreading by deliquescence.

OXIDIFIABLE NON-METALLIC ELEMENTS.

ANIMAL CHARCOAL, (*Purified.*)

Carbo Animalis Purificatus.

Calcine the bones of sheep or deer in an iron cylinder protected from the contact of air, and until all volatile matter is expelled. Reduce the residue to extremely fine powder, of this to each pound add water twelve fluid ounces, common muriatic acid twelve fluid ounces, agitate occasionally for two days, then boil, dilute with one gallon of water, filter through calico, and wash the black deposit with water, till the washings give no precipitate with carbonate of soda. Dry the charcoal, and heat it slowly to redness in a closed crucible.

Bones consist chiefly of gelatine and phosphate of lime. Gelatine is a compound of carbon, hydrogen, oxygen, and nitrogen; on burning in close vessels the phosphate of lime and carbon remain, and by washing with dilute muriatic acid, the former is dissolved.

Use.—Charcoal thus prepared, possesses considerable bleaching and disinfecting power, and is often used for rendering syrups, vegetable acids, and alkaloids colourless.

BROMINE.

Bromine is a simple substance obtained from sea-water in which it exists combined with magnesium or sodium, and in the extremely minute proportion of $3\frac{1}{3}$d grains to 100 lbs. of water. A current of chlorine is passed through bittern. This separates the bromine from the metals; on agitating the mixture with sulphuric ether the bromine is dissolved, and

the solution floats on the saline liquid and may be removed by a syphon.

Bromine is a brown liquid, of heavy offensive odour, sp. gr. 3, soluble in alcohol, difficultly so in water, volatile with evolution of reddish fumes, boils at 116°, gives a yellow colour to starch.

Equivalent, ... 78

Use.—For preparation of *Bromide of Potassium.*

CHLORINE, (*Solution of*)

Muriate of soda sixty grains, sulphuric acid two fluid drachms, red oxide of lead three hundred and fifty grains, water eight fluid ounces. Triturate the salt and oxide together, put them into the water contained in a bottle with a glass stopper, add the acid, agitate occasionally till the red oxide becomes almost white. Allow the insoluble matter to subside before using the liquid.

For this beautiful, and in India most useful process, we are indebted to the last Edition of the Edinburgh Phamacopœia. It supersedes the use of manganese, which in India can only be procured from European druggists.

Common salt contains 1 eq. chlorine, 1 eq. of metallic sodium. Red lead contains 1 eq. lead, 2 eqs. oxygen ; on adding sulphuric acid, 1 eq. there are formed—

Oxide of lead, which becomes the sulphate of lead, and falls down.

Oxide of sodium, which with sulphuric acid remains in solution, as sulphate of soda.

Chlorine dissolved in the water.

The presence of the sulphate of soda in solution, does not interfere with the uses of the chlorine liquid.

Use.—For bleaching, also for inhalation, and for the fumigation of infected apartments.

CHLORINE GAS.

Black oxide of manganese one ounce, common salt three ounces, sulphuric acid two ounces, water three ounces, in-

troduce the manganese and salt into a leaden retort, pour in the water, and then add the sulphuric acid. Lead the gas wherever required by leaden pipes.

The chloride of sodium is decomposed, its chlorine set free, its sodium oxidixed by one eq. oxygen, derived from the peroxide of manganese. The sulphuric acid with the oxide of sodium and protoxide of manganese forms sulphate of soda, and protosulphate of manganese.

Chlorine is a greenish yellow gas, excessively acrid, and irritating to the respiratory organs, soluble in water, a supporter of combustion. It unites with the simple substances, and also with many compound bodies, bleaches powerfully ; combining equivalent 36.

Use.—For preparing the chloride of lime and soda, and for fumigations.

IODINE.

Take of commercial iodine any quantity. As this always contains water and cannot be deprived of this by heat, which would volatilize both, the Edinburgh College directs its being dried by being placed in a shallow plate under a bell glass, and surrounded by ten times its weight of fresh burned lime.

This will remove its moisture in about three days.

Iodine is of deep bluish colour, totally volatile by a moderate heat, vapour of fine violet colour; sp. gr. 3. combining equivalent 126; unites with metals, forming iodides. Of these, the iodides of potassium, lead, iron, arsenic, and mercury are used in medicine.

Iodine is procurable by burning large quantities of sea weed or of the conferva of the salt water lake near Calcutta. Wash the residue with water, evaporate the washings to dryness. Act on these by a small portion of water; much sulphate of lime is left with other difficultly soluble matters. This being repeated till no further deposit takes place, the liquid is mixed, in a leaden retort, with peroxide of manganese and sulphuric acid. Vapors of iodine are set free, and may be collected in glass receivers, on the sides of which they condense.

This process is only economical where the weeds yield enough of impure carbonate of soda, to cover the general expense of this operation. This is not the case with the Calcutta conferva.

(For detection of Adulteration, see Materia Medica.)

Use.—For the preparation of the tincture of iodine and of the iodides above mentioned.

SULPHUR.

Sublime common sulphur, wash the powder with successive quantities of hot water till the washings cease to have a sour taste or redden litmus paper. Then dry the sulphur by a gentle heat or exposure to the sun.

Sulphur is a yellow solid, sp. gr. 1.99. insoluble in water, or the acids, dissolved by fixed alkalies with decomposition of water, sulphurous and sulphuric acids and sulphuretted hydrogen being formed, which combine with the alkali present. Equivalent 16.

Use.—In ointment as a remedy for itch and other cutaneous maladies, also aperient and diaphoretic in doses of one to three drachms given with milk or as an electuary.

MIXTURES.

Misturæ.

This term is applied to fluid remedies composed of different ingredients, not necessarily and chemically united with each other, but either dissolved or suspended by means of mucilage, &c.

Mixture of Ammoniacum.

Ammoniacum five drachms, water one pint, mix well together by trituration.

Use.—Much given (generally with tincture of squill) as an expectorant in chronic coughs. It should not be prescribed with acids, as these coagulate the mixture. This preparation is not included in the Edinburgh Pharmacopœia.

Almond Mixture.

Mistura Amydalarum.

Confection of almonds two and a half ounces, water a pint, mix gradually and strain.

Use.—This is a solution of sugar, gum, and the albumen of the almond in water. It is a very palatable demulcent. It should not be prescribed with spirit or tinctures, by which it is partially coagulated.

Assafœtida Mixture.

Assafœtida five drachms, water a pint. Rub and mix thoroughly.

Use.—Given in doses of half a fluid ounce to one ounce, as an antispasmodic.

Barley Mixture.

Mistura Hordei.

Barley (cleaned by washing,) sliced figs, and raisins freed of seeds, each two ounces and a half, liquorice root or goonch root five drachms, water five pints and a half. Boil the barley with four and a half pints of water down to two pints, add the rest of the water with the figs, raisins and liquorice; boil again to two pints and strain.

Use.—Merely as a demulcent; it may be taken to any desired extent.

Mixture of Brandy.

Mistura Spiritus Gallici.

Brandy and cinnamon water, each four fluid ounces, yelks of two eggs, purified sugar half an ounce, oil of cinnamon two minims.

This is the formula of the London College. We think the eggs and oil of cinnamon might be left out, the quantity of water doubled, plain hot water being used, and a little rind of lemon added.

Use.—A stimulant in low fever, cholera, &c. *Dose*, one ounce as required.

Camphor Mixture.

Camphor half a drachm, rectified spirit ten minims, water a pint. Pour the spirit on the camphor, by which means it is very easily reduced to a fine powder, diffuse this through the water, and strain through calico.

This is the London preparation. As a fluid ounce contains but a trace of camphor, it must be regarded as inert, having merely the smell, but none of the stimulating powers of the drug.

The Edinburgh College direct—

Camphor one scruple, sweet almonds and pure sugar each half an ounce. Blanch the almonds, triturate the camphor and sugar, then add the almonds, beat into a pulp, lastly and gradually add the water and strain.

This formula contains a notable portion of camphor undissolved by the sugar.

The straining must not be neglected, otherwise the undissolved camphor would rise to the top of the liquid, and might be taken in a single dose.

Use.—A valuable stimulant in the collapse of fever and cholera, in syncope, and many other diseases of debility. *Dose*, one to three ounces.

Compound Cascarilla Mixture.

Infusion of cascarilla seventeen fluid ounces, vinegar of squill (*a*), a fluid ounce, compound tincture of camphor two fluid ounces.

Mix.—A valuable stimulant and expectorant. (*a*) When squill cannot be obtained, the *Vinegar* of the *Kanoor* may be substituted.

Chalk Mixture.

Mistura Cretæ.

Prepared chalk half an ounce, sugar three drachms, gum mixture a fluid ounce and half, cinnamon water eight fluid ounces. Rub the sugar and chalk together, then add the gum mixture, and lastly the cinnamon.

Use.—Antacid and slightly stimulant; much used with other remedies, especially opium and catechu, in diarrhœa. *Dose*, one to two fluid ounces. It should not be prescribed with acids or strongly acid salts, such as alum.

Creasote Mixture.

Creasote and acetic acid each sixteen ounces, syrup a fluid ounce, compound spirit of juniper or cardamoms a fluid

ounce, water fourteen fluid ounces. Mix the creasote and acid, then the water, lastly the syrup and spirit.

The acetic acid dissolves the creasote, and the sugar and spirit tend to diminish its acrid and disagreeable flavour.

Use.—Recommended as a powerful diuretic, and to stop vomiting in cases of irritation of the stomach not dependent on inflammation. *Dose,* half an ounce to an ounce; also as a wash to indolent ulcers and tinea of the scalp.

Compound Mixture of Gentian.

Compound infusion of gentian (*a*) twelve fluid ounces, compound infusion of senna six fluid ounces, compound mixture of cardamoms two fluid ounces.

(*a*) Compound infusion of *Chiretta* or of *Kurroo* may be used instead.

Use.—Aperient and tonic. *Dose,* one to two ounces.

Mixture of Guaiacum.

Guaiacum resin three drachms, sugar half an ounce, gum mixture half a fluid ounce, cinnamon water thirteen fluid ounces. Rub the guaiacum and sugar, then the gum mixture, and lastly the cinnamon water.

Use.—A stimulant diaphoretic. *Dose,* half a fluid ounce to an ounce and a half, two or three times daily.

Gum Mixture.

Mistura Acaciæ.

Powdered acacia gum (*a*) ten ounces, boiling water a pint, dissolve the gum by rubbing, and if necessary, strain.

(*a*) The best kinds of *babul* gum may be used instead of the true gum arabic. Where neither can be obtained, the fibrous parts of the root of the cotton tree, *(sufed mooslie,)* powdered and used in the proportion of four ounces to the pint of water and strained, afford an excellent substitute.

This is the *mucilage* of the Edinburgh Pharmacopœia, which directs but nine ounces of gum with cold water.

Use.—Demulcent, and an ingredient in many other mixtures.

Compound Iron Mixture.

Mistura Ferri Composita.

Myrrh (*a*) two drachms, carbonate of potash one drachm, rose-water eighteen fluid ounces, sulphate of iron powdered two scruples and a half, spirit of nutmeg a fluid ounce, sugar two drachms. Rub the myrrh, the spirit of nutmeg and carbonate of potash together; while rubbing add the rose-water and sugar, lastly the sulphate of iron, and pour immediately into a glass stoppered bottle.

(*a*) The *googul* of the bazars may be substituted for myrrh, when this substance is not procurable.

The mixture contains sulphate of potash and proto-carbonate of iron in addition to the vegetable ingredients. It soon spoils, the peroxide of iron being formed.

It should only be prepared when required.

Use.—A very useful tonic, somewhat astringent and stimulant; much given in the atonic diseases of females, especially in chlorosis and amennhorrœa. *Dose*, one fluid ounce to two ounces two or three times daily. It must not be prescribed with acids, alum, or vegetable astringents.

Magnesia Mixture.

Carbonate of magnesia one drachm, sulphate of magnesia two drachms, fresh lemon juice three drachms, tolu syrup and spirit of nutmeg each one drachm, distilled water nine drachms. Mix.

This is Mr. Nicolson's "*White Draught.*"

It contains essentially sulphate and citrate of magnesia, and is an excellent mode of administering those aperient salts.

Mixture of Mecca Balsam.

Acacia or white mooslie mixture eight fluid ounces, Balsam of Mecca *(Roghen bulsan)* two fluid drachms, rub well together.

Use.—A valuable stimulant and tonic, much prized by the Mahomedans of India. *Dose*, half a fluid ounce to one ounce three times daily.

Musk Mixture.

Mistura Moschi.

Musk, gum arabic and sugar, powdered, each three drachms, rose-water a pint, rub the musk and sugar together, then the gum and rose-water.

Use.—A valuable stimulant, especially in low typhus fever, the collapse from delirium tremens, &c. *Dose*, one to two fluid ounces, repeated according to symptoms.

Scammony Mixture.

Resin of scammony seven grains, milk three fluid ounces, triturate together.

Use.—This is a good mode of administering scammony. *Dose*, according to circumstances, half or the whole of this mixture.

Tragacanth Mucilage.

Tragacanth two drachms, boiling water nine fluid ounces, macerate for twenty-four hours, triturate in a mortar, and press through calico.

Use.—In making lozenges or troches.

VOLATILE OILS.

These oils differ from the fixed, in being volatile by heat without undergoing decomposition.

Mixed with water a small proportion is dissolved, on applying heat the vapour of water and that of the oil distil over together. A few require rather a higher temperature than that of boiling water, for example, that of a solution of salt, for their distillation.

Essential oils are usually obtained from the fruits, often from the flowers or bark, occasionally from roots. The natural families of *Umbelliferæ*, *Laurineæ*, and *Compositæ* yield the greatest number of those employed in Pharmacy.

In the distillation of essential oils, it is necessary to prevent the substance acted upon from being charred or in any degree burned by the heat applied, for by this burning many products of disagreeable smell and acrid taste would be generated, and the fragrance of the oil injured. This is avoided by preventing the matter from touching the bottom or sides of the vessel in which it is to be distilled. In some cases, the article may be enclosed in a net or cloth, in others it is necessary to place it in a second vessel well perforated with holes, and standing within the first at an inch distant from its bottom.

Adulterations.—These are chiefly—

The fixed Oils.
Oil of Turpentine.
Alcohol.

1. The fixed oils are detected by volatilizing a few drops of the liquid on paper, the fixed oil remains, leaving a greasy stain.

2. Oil of turpentine can only be recognized by its smell.

3. Alcohol is detected by water, which renders the mixture milky if alcohol be present.

In the distillation of volatile oils, we strongly recommend that instead of the worm condenser, the straight tube condenser be used.

This consists of a glass tube one to two feet long, half an inch in diameter, terminating in a widened neck to receive the end of the distilling vessel. The glass tube is enclosed in a larger tube of tinned iron or copper, closed round the glass tube by corks, and these secured by cement. This outer tube is to contain water for effecting the condensation, but as the water soon becomes hot, it is necessary to provide for its constant flow through the tube; this is done by a thin pipe provided with a funnel, the pipe running to the lower end of the tube, so that cold water dropping into the funnel from any of the vessel above it, would proceed to the lower end of the large tube, thence rising as it becomes warm to the upper end where it is discharged from a small opening left for the purpose.

The advantages of this apparatus are, that after each distillation it may be thoroughly cleaned by a sponge moistened with spirit and fastened to a wire, and all trace of the odour of the last oil distilled effectually removed. This cannot be done with the ordinary worm still.

In some cases, such as the distillation of water and ether, the inner tube may be of lead.

In distilling flowers, as much water should be used as will cover them in the vessel. Seeds must be bruised, roots rasped or shaved. The distilled oil is sometimes heavier, usually lighter than water. A small portion is retained in solution in the water to which it imparts its flavour. The "*Distilled Waters*" of the Pharmacopœia are preparations of this kind.

Volatile oils are of various colours, very inflammable, some congeal by a very slight reduction of temperature, many take fire when nitric acid is poured upon them, several deposit camphor on keeping,

or by a current of muriatic acid gas are made to yield crystals of that substance. In composition they are found to consist essentially of a basic compound of carbon and hydrogen, united with oxygen in various proportions.

Bergamot Oil, (*Or Oil of Rind of the Bergamot Lime, Citrus Limetta.*)

Rasp the rind, express the raspings between flat porcelain slabs, allow the oil to settle, and then filter.

The exquisite flavor of this oil is injured by distillation. It is used chiefly as a perfume, colour yellow, sp. gr. 0.888, freezes at 32°.

Purified Oil of Turpentine.

Oleum Terebinthinæ Purificatum.

Oil of turpentine one pint, water four pints, distil together.

Use.—A powerful purgative in doses of one ounce; diuretic in doses of one drachm; a specific in tape worm in the former dose; usually given in emulsion with gum water, sugar and a little spirit; much given with castor oil in the proportion of two drachms of turpentine to half an ounce of castor oil. Oil of turpentine is also a very useful external stimulant.

Oil of Copaiba.

Copaiba balsam one ounce, water a pint and a half. Distil, return the water to the still, and repeat this while any oil comes over.

Use, see next article.

Gurgun Oil.

Gurgun balsam one pound, dried muriate of lime one ounce, agitate well for an hour in a stoppered bottle and then distil from a capacious leaden bottle.

Gurgun balsam contains fixed resin, essential oil, and water. If the latter be not separated, it boils with explosive violence. The separation is effected by the dried muriate of lime. A small portion of the essential oil may be obtained by distillation with water in the common way. By the above process 35 to 50 per 100 are obtained. The boiling point of the oil is 313.

Use.—A good substitute for copaiba balsam in the treatment of gonorrhœa, given diffused through almond mixture or gum water. *Dose*, ten to fifteen minims repeated thrice daily, or as often as necessary.

We append a table of volatile oils employed in medical practice. They are almost all powerful stimulants and carminatives. A drop or two dissolved in a few minims of spirit, and an ounce of water added, gives an extemporaneous substitute for the distilled water of the plant, and a useful vehicle for many draughts or mixtures. These oils are often added in minute quantities to pill-masses, either to give an agreeable flavour, or counteract their tendency to griping.

TABLE OF VOLATILE OILS.

Classical & English Name of Plant	*Native Name.*	*Part used.*	*Colour of Oil.*	*Sp. Gr.*	*Use and Remarks.*
Pimpinella anisum, *common anise,*	....	Fruits, ...	Yellow, ...	0.985	Carminative, congeals at 50°.
Illicium anisatum, *star anise,*	Badian kutai,.....	Ditto,	Yellow,	Ditto.	Ditto.
Anthemis nobilis, *chamomile,*	Baboone, ...	Flowers,....	Deep blue, ...	....	Tonic, anthelmintic.
Lavandula vera, *lavender,*	....	Flowers,....	Yellow, ...	0.877 to 0.905	Fragrant, stimulant.
Ruta graveolens, & other species, *rue,*	Sudab, ...	Flowers and herb,	Yellow, ...	....	Stimulant, given in amennhorœa.
Andropogon Iwaranchusa, ...	Roosa, ...	Grass, ...	Yellow, ...	....	Fragrant and stimulant.
Anethum graveolens, *dill,*					
———— Sowa, ...	Sonf, ...	Fruits, ...	Yellow, ...	0.994	Stimulant in flatulence.
———— Panmori, ...					
Carum carui, *carraway,*	Zeera seeah, ...	Fruits, ...	Yellow, ...	....	Ditto.
———— nigrum, ...					
Eugenia Pimento, *(allspice,)* ..	....	Fruits, ...	Yellow, ...	....	
Amomum Zingiber, *(ginger,)* ..	Ada, ...	Root, ...	Yellow, ...	....	Ditto.
Fœniculum officinale, *(fennel,)* ..	....	Fruits, ...	....	0.997	
Melaleuca cajeputi, *(cajeput,)* ..	Kyapooti, ...	Leaves, ...	Green, ...	0.927	
Juniperus communis, *(juniper,)*	Hoober, ...	Fruits, ...	Green, ...	0.878	Stimulant and diuretic.
Piper Cubeba, *(cubebs,)*	Kubab chinee, ...	Fruits, ...	Yellow, ...	....	Ditto.
Caryophyllus aromaticus, *(clove,)*	Long, ...	Unripe flowers dried	Yellow, ...	1.055	Almost caustic.
Laurus cinnamomum, *(cinnamon,)*	Darchinee,..	Bark, ...	Reddish yellow,	....	Ditto.
Juniperus sabina, *(savine.)*	....	Tops, ...	Yellow, ...	....	In amennhorœa.
Ocymum basilicum, *(basil,)*	Tulsi, ...	Herb, ...	Yellow, ...	....	
Rosmarinus officinalis, *(rosemary,)*	....	Tops, ...	Yellow, ...	0.934	Carminative.
Moringa pterygosperma, *(sohunjuna,)*	Sohunjuna, ...	Roots,....	Yellow, ...	....	Vesicatory.
Mentha piperita, *(peppermint,)* ..	....	Herb, ...	Yellow, ...	0.920	Ditto, much used in cholera.
Mentha Pulegium, *(pennyroyal,)*	....	Herb, ...	Yellow, ...	....	Ditto, stimulant.
Mentha viridis, *(spearmint,)*	Pudina, ...	Herb, ...	Yellow, ...	....	Ditto.
Amomum cardamomum, *(cardamom,)*	Elachee, ...	Fruits, ...	Yellow, ...	....	
Origanum majorana, *(marjoram,)*	....	Herb, ...	Yellow, [less,	....	Ditto.
Sassafras officinale,* *(sassafras,)*	....	Bruised root, ...	Yellow, or color-	1.094	Fragrant and diuretic.

* We have obtained a beautiful oil from the Nipal sassafras.

OINTMENTS, CERATES, POULTICES, PLASTERS AND LINIMENTS.

Ointments, *(Unguenta.)*

Antimonial Ointment—Tartar Emetic Ointment.

Tartar emetic one ounce, lard(*a*) four ounces. Mix.

Use.—A little of this ointment rubbed on the skin thrice daily, in two or three days causes an eruption of large pustules. The counter-irritation thus occasioned proves of great service in many inflammatory states of internal organs.

(*a*) For *lard* in this and all the subsequent formulæ, an equal weight of simple ointment may be substituted for practice among the natives; this substitution is often absolutely necessary.

Ointment of Cantharides.

Powdered cantharides(*a*) one ounce, distilled water four fluid ounces, cerate of resin four ounces. Boil down the water with the cantharides to half, strain, mix the cerate with the strained liquor, and evaporate to a proper consistence.

(*aa*) For cantharides in both these formulæ, substitute 1-4th less in quantity of the *Telini*, or Bengal fly.

This is one of the London preparations, and is almost inert.

Ointment of Infusion of Cantharides.—*Ed.*

Cantharides powder,(*a*) resin, wax, gunda-barosa and lard each two ounces, boiling water five fluid ounces. Infuse the cantharides in the water for twelve hours, press strongly, add the infusion to the melted lard, and boil away the water, then add the wax and resin. When these are liquid, remove the vessel from the fire, add the gunda-barosa and mix thoroughly.

(a) See above formula.

Use.—This is a very valuable stimulating ointment. It is slowly epispastic.

Chakoon Ointment.

Chakoon seed very finely powdered and sifted, any quantity. Beat into a paste, with as much simple ointment as may be required.

Use.—An excellent native application to ringworm.

Chaulmoogra Ointment.

Chaulmoogra seed any quantity, remove the husks, and beat the seed into a paste with as much simple ointment as may be requisite.

Use.—A favorite and good application among the native practitioners for the treatment of several cutaneous diseases, especially herpes and tinea.

Compound Cinnabar Ointment.

Sulphur half an ounce, borax two drachms, cinnabar (rāsa sendur) two drachms, wood oil (gurjun-ke-tel) four drachms, make into the consistence of an ointment.

Use.—This is Captain Aitkin's well known and useful "ringworm ointment."

Creosote Ointment.

Creosote half a drachm, spermaceti ointment one ounce. Mix.

Creosote is an oily liquid obtained during the distillation of wood, sp. gr. 1037, boiling point 397°. It is partially soluble in water, soluble in alcohol, ether, and naptha; highly antiseptic and coagulates albumen.

Use.—Creosote applied to a carious tooth often gives instant relief to tooth-ache. The watery solution and the ointment are valuable applications in many cutaneous diseases. Internally, creosote has been employed as a stimulant and to stop vomiting, given in doses of one minim dissolved in any aromatic distilled water. The taste and odour are smoky and penetrating.

Daod-Murden Ointment.

Fresh leaves of daoud-murden any quantity bruised into a paste, simple ointment an equal bulk. Rub well together.

Use.—Almost specific in ringworm.

Compound Gall Ointment.

Galls finely powdered two drachms, hard opium powdered half a drachm, spermaceti ointment half a drachm. Mix. A good application to hæmorrhoids.

The *chebulic myrobalon* finely powdered may be substituted for the galls. We employ spermaceti cerate instead of the axunge of the London College.

Ointment of Gunda Barosa.

Sesamum or poppy oil, white wax, and gunda barosa each one ounce.

Use.—This is the late Mr. Muston's *Boil Ointment*, and is a very useful application. It is an excellent substitute for the Elemi Ointment of the London Pharmacopœia.

Compound Iodine Ointment.

Iodine half a drachm, ioduret of potassium one drachm, rectified spirit one fluid drachm, lard two ounces.

Rub the iodine and ioduret of potassium with the spirit, and then with the lard.

Use.—An application to indolent tumours, especially to bronchocele.

Compound Lead Ointment.

Prepared chalk eight ounces, distilled vinegar six fluid ounces, lead plaster three pounds.

Melt the plaster in the oil with a gentle heat, gradually add the chalk previously mixed with the vinegar till effervescence ceases, stir constantly till cool.

Use.—A dressing to indolent ulcers.

Ointment of Acetate of Lead.

Simple ointment twenty drachms, acetate of lead in fine powder one drachm.

Mix thoroughly.

Ointment of Carbonate of Lead.

Simple ointment five ounces, carbonate of lead one ounce.

Mix thoroughly.

These are Edinburgh preparations, and in every respect superior to the London.

Ointment of Ioduret of Lead.

Ioduret of lead one drachm, lard eight drachms.

Mix intimately. *Use.*—In glandular and chronic enlargements, and scrofulous ulcerations.

Strong Mercurial Ointment.

Mercury two pounds, lard twenty-three ounces, suet one ounce; rub the mercury in a marble mortar with a wooden pestle, with the suet and a little of the lard until globules are no longer seen, add the rest of the lard, and mix.

The fatty matters first subdivide the mercury, and this is then partially oxidized in the first degree. The preparation is very tedious.

Use.—Rubbed into the skin in portions of half a drachm to one drachm twice or more frequently daily, it soon excites mercurial action in the system. This method is much resorted to in venereal affections and chronic hepatitis.

Mild Mercurial Ointment.

Strong mercurial ointment one pound, lard two pounds.

Use.—In cases similar to the last. It contains one-sixth its weight of mercury.

Ointment of Nitrate of Mercury.

Mercury one ounce, nitric acid eleven fluid drachms, lard six ounces, poppy oil four fluid ounces. Dissolve the mercury in the acid, mix the hot solution with the lard and oil melted together.

This is a mixture of nitrate of the peroxide of mercury with the fatty matters; mixed with twice or thrice its bulk of simple cerate, it is a very useful stimulating application.

Citrine Ointment.

Pure nitric acid eight ounces, mercury four ounces, lard fifteen ounces, olive or poppy oil thirty-two ounces. Dissolve the mercury in the acid with a gentle heat, melt the lard in the oil. While the mixture is hot add the hot solution of mercury, great effervescence occurs, or if this does not take place, increase the heat till it does so. The vessel used must be of earthenware, and of very large capacity. The ointment should be kept in earthen or glass vessels unexposed to the light.

This is "Duncan's Golden Eye Ointment," and the best preparation of the kind we know of. It is applied with great benefit in chronic inflammation of the edges of the eye lids, &c.

Ointment of Nitric Oxide of Mercury.

Nitric oxide of mercury, finely powdered, one ounce, white wax two ounces, lard six ounces. Melt the wax and lard together, and mix the peroxide intimately.

Use.—The same as the last ointment.

Ointment of Binioduret of Mercury.

Binioduret of mercury one drachm, white wax two drachms, lard six drachms; melt the wax and lard, and mix the binioduret.

Use.—As a specific stimulant to scrofulous and syphilitic sores.

Ointment of Ammonio-Chloride of Mercury.

Ammonio-chloride of mercury one drachm, lard one ounce and a half; melt with a gentle heat and mix.

Use.—Stimulant.

Compound Myrobalon Ointment.

Chebulic Myrobalon dried and reduced to fine powder, catechu powdered equal weights, simple ointment as much as requisite to give the consistence of a paste.

Use.—A valuable ointment for excoriated surfaces.

Pitch Ointment.

Black pitch, wax, and resin each nine drachms, poppy oil sixteen drachms. Melt together and press through cloth.

Use.—Stimulant.

Resinous Ointment.

Resin five ounces, lard eight ounces, bees' wax two ounces. Melt with a gentle heat, stirring briskly as it cools.

Use.—A common stimulant dressing.

Simple Ointment.

Poppy oil five and half fluid ounces, bees' wax, white, two ounces. Melt and stir briskly during cooling.

Spermaceti Ointment.

Spermaceti six drachms, white wax two drachms, poppy oil three fluid ounces. Melt over a slow fire and stir constantly till cold.

Use.—A simple dressing.

Ointment of Sal-Ammoniac and Borax.

Borax and sal-ammoniac each half a drachm, white precipitate of mercury one scruple, oil of turpentine one fluid drachm, flowers of sulphur half an ounce, lard, simple ointment, each two ounces. Mix intimately.

Use.—This formula supplied by the Medical Board, affords a favorite and useful remedy for ringworm.

Sulphur Ointment.

Sulphur three ounces, lard half a pound, oil of bergamot or of sassafras twenty minims.

Use.—Common itch ointment.

Tar Ointment.

Tar and suet each one pound, melt together, and press through a cloth.

Used as an application in herpetic eruptions and tinea.

Ointment of Verdigris.

Resinous ointment fifteen ounces, verdigris powdered one ounce. Melt, mix, and stir constantly till the mixture cools.

Use.—A good stimulant and mild escharotic in many cases of chronic ulcerations.

Ointment of Verdigris and Pitch.

Dried pitch four drachms, yellow wax three drachms, oil of turpentine two drachms, verdigris one drachm. Mix intimately.

Use.—This is Mr. Martin's "*Corn Plaster*," and a very good application.

Zinc Ointment.

Oxide of zinc one ounce, lard six ounces. Mix.

Use.—Useful in chronic ophthalmia, being rubbed at night on the edges of the eyelids.

CERATES.

Calamine Cerate.

Calamine and white wax each half a pound, poppy oil sixteen fluid ounces. Mix the oil and melted wax, then add

the calamine as they thicken, and triturate well to a uniform mass.

Use.—Commonly called *Turner's Cerate*, a popular dressing to sores and excoriations.

Cantharides Cerate.

Cantharides finely powdered (*a*) one ounce, spermaceti cerate six ounces; add the cantharides to the cerate previously melted. Mix intimately.

(*a*) The country fly (*Telini*) may be substituted in the proportion of six drachms.

Use.—After a blister has been successfully applied, this cerate is used to keep up the discharge.

Telini Cerate.

Telini fly (the spotted kind) six drachms, spermaceti cerate six ounces. Preparation and use as above.

Cerate of Acetate of Lead.

Acetate of lead powdered two drachms, white wax two ounces, poppy oil eight fluid ounces. Dissolve the wax in three-fourths of the oil, rub the acetate of lead with the rest of the oil, and then stir briskly till they unite.

Use.—A favourite dressing to bruised and excoriated surfaces.

Compound Lead Cerate.

Solution of sub-acetate of lead eight fluid ounces, wax four ounces, poppy oil half a pound, camphor half a drachm. Mix three-fourths of the oil with the wax as above. As they cool, stir in the sub-acetate of lead, and when cold mix the camphor dissolved in the rest of the oil.

Use.—This is the well known *Goulard's Cerate*, used as the last, and of popular repute as an application to the edges of the eyelids in chronic ophthalmia.

Compound Mercurial Cerate.

Stronger ointment of mercury four ounces, soap cerate and camphor (powdered) each one ounce. Triturate together well.

Use.—An application to indurated glands and chronic swellings.

Resinous Cerate.

Resin and wax each one pound, poppy oil sixteen fluid ounces. Melt the wax and resin by a soft fire, add the oil, and mix intimately.

The troublesome step of pressing through a cloth, directed by the London College, is quite unnecessary, if the materials be pure.

Use.—This is the *Basilicon Ointment* of popular notoriety, in common use as a gently stimulating application to old and foul sores.

Savine Cerate.

Savine bruised one pound, simple cerate two pounds; melt together, mix intimately and press through cloth.

We substitute the simple cerate for the lard, directed in the London Pharmacopœia.

Canella Cerate.

Prepared as the last, substituting dried and powdered Canella leaf six ounces.

Use.—The same.

Simple Cerate.

Poppy oil four fluid ounces, wax (bleached) four ounces; melt the wax, add the oil, and mix.

Use.—A common dressing.

Soap Cerate.

Ceratum Saponis.

Soap ten ounces, wax twelve and a half ounces, oxide of lead powdered fifteen ounces, poppy oil one pound, vinegar

one gallon. Boil the litharge and vinegar slowly until they unite, add the soap in shavings, and boil again till all the water is driven off; lastly, mix the wax dissolved in the oil.

Use.—A cooling dressing.

Spermaceti Cerate.

Ceratum Cetacei.

Spermaceti two ounces, white wax eight ounces, poppy oil one pound; melt the wax and spermaceti together, and add the oil, stirring briskly till cool.

Use.—An excellent cooling dressing.

POULTICES.

(Cataplasmata.)

Poultice of Arum.

Orissa arum *(Ghet Kuchoo)* bruised to pulp with tepid water, any quantity.

Use.—A stimulant rubefacient and counter-irritant, applied to indolent buboes and tumors by the native practitioners, and with frequent advantage.

Poultice of Coronilla Leaf—Poultice of Nuteeya Leaf.

Prepared as Nim leaf poultices.

Use.—Favourite external emollients among the native practitioners.

Poultice of Datura.

Datura leaves fresh and bruised, flour, equal weights, water sufficient to make into a paste.

Use.—A good narcotic poultice to inflamed tumors, and to external, but not to ulcerated, piles.

Poultice of Hemlock.

Cataplasma Conii.

Extract of hemlock two ounces, water one pint. Mix and add bruised linseed meal to give a proper consistence.

Use.—A good application to painful sores and scrofulous tumors.

Lal-Chitra Poultice.

Bark of the root of the lal-chitra bruised and made into a paste, with water any quantity.

Use.—A powerful, cheap and excellent blister. (*See Dispensatory, page* 508.)

Poultice of Linseed.

Catap. Lini.

Linseed powdered any quantity, boiling water enough to give it the consistence of a thick paste.

Use.—The usual hospital poultice.

Poultice of Mustard.

Catap. Sinapis.

Powdered mustard seed and tepid water sufficient to make a thick paste.

This is the *sinapism* of practice. The London College direct an equal weight of linseed to be added, and boiling vinegar as the fluid. This is unnecessary complexity. Sinapisms act by the irritation they occasion, and this depends on their volatile oil. They are of the greatest utility in cholera, low fever, colic, and many other maladies.

The Bengal mustard seed if previously deprived of its oil by expression, yields a powder of nearly equally stimulating power to the English article.

Poultice of Nim Leaf.

Fresh Nim leaves bruised and moistened with tepid water any quantity.

Use.—A favorite application among the native practitioners, especially in swelled testis, and to foul indolent ulcers.

Poultice of Yest.

Cataplasma Cerevisiæ.

Flour one pound, yest half a pound; mix by a gentle heat.

Use.—This is commonly called the *Fermenting Poultice.* The yest and flour undergo fermentation, and carbonic acid is gradually formed. It is a very useful application in sloughing and fœtid sores.

LINIMENTS.

Liniment of Ammonia.

Poppy oil two fluid ounces, water of ammonia, (sp. gr. 960,) one fluid ounce. Mix well together, and preserve in a stoppered phial.

Use.—An excellent counter-irritant for external application. In inflamed tonsils and inflammatory states of the uvula and pharynx, it is rubbed on the throat with much benefit.

The London College have an inefficient preparation called the Liniment of the "Sesqui-Carbonate of Ammonia," which is omitted, as almost inert.

Camphor Liniment.

Poppy oil four fluid ounces, camphor one ounce. Triturate together till the camphor is dissolved.

Compound Camphor Liniment.

Tincture of camphor two fluid ounces, water of ammonia, (stronger) five fluid ounces, spirit of cinnamon one fluid ounce. Mix well together.

The spirit of cinnamon is substituted for the spirit of lavender of the London College.

Use.—Both these liniments are used as counter-irritants, and as applications to indolent tumours.

Lime Water Liniment.

Linimentum Aquæ Calcis.

Linseed oil or til oil, lime water equal measures. Mix well together.

Use.—As an application to excoriated surfaces, in scalds and burns.

Compound Mercurial Liniment.

Linimentum Hydrargyri Compositum.

Stronger mercurial ointment and simple ointment each four ounces, camphor one ounce, rectified spirit a fluid drachm, solution of ammonia four fluid ounces; rub the camphor with the spirit, then with the simple and mercurial ointment; lastly, add the ammonia, and mix intimately.

Use.—To stimulate and promote the absorption of tumors, and to convey mercury into the system; one drachm, equal to ten grains of mercury, may be rubbed in morning and evening. The preparation is derived from the London Pharmacopœia.

Liniment of Opium.

Windsor or Castile soap six ounces, opium an ounce and a half, camphor three ounces, oil of sandal six fluid drachms, rectified spirit two pints; macerate the soap and opium in the spirit for three days, filter through calico, add the oil and camphor, and agitate well together.

Use.—A favorite application to bruises, painful swellings, in rheumatism, lumbago, &c.

Simple Liniment.

Poppy oil four parts, white wax one part, dissolve the wax in the oil by a gentle heat, and mix well together while the mass is cooling.

Use.—As an addition to other liniments for frictions, and as an application to ulcerated and excoriated surfaces.

Soap Liniment.

Linimentum Saponis.

Castile or Windsor soap five ounces, camphor two ounces and a half, sandal wood oil six fluid drachms; digest the soap in the spirit for three days, add the camphor and oil, and mix well by agitation.

Use.—A stimulant and sedative liniment.

Liniment of Turpentine.

Linimentum Terebinthinæ.

Resinous ointment four ounces, oil of turpentine five fluid ounces, camphor half an ounce; melt the ointment and mix it well with the camphor and oil.

Use.—A very stimulating application.

Liniment of Verdigris.

Linimentum Æruginis.

Verdigris in powder an ounce, vinegar seven fluid ounces, honey fourteen ounces; dissolve the verdigris in the vinegar, strain through calico, then pour in the honey, and boil down to the consistence of a thick soft paste.

Use.—A mild caustic.

PLASTERS.

Emplastra.

Ammoniacum Plaster.

Ammoniacum five ounces, distilled vinegar eight ounces. Dissolve the ammoniacum in the vinegar. Evaporate gently to the consistence of a soft but firm mass.

Use.—A stimulant application to indolent swellings.

Ammoniacum Plaster with Mercury.

Ammoniacum one pound, mercury three ounces, poppy oil one fluid drachm, sulphur eight grains. Heat the oil, add the sulphur and make them unite by stirring, then rub the mercury with this till no metallic globules are perceptible; lastly, add the ammoniacum melted. Mix thoroughly.

Use.—As above, but more powerful and used chiefly to venereal tumours.

Belladonna Plaster.

Resin plaster eight ounces, alcoholic extract of belladonna one and a half ounce. Add the extract to the plaster, melted by a water bath, and mix.

Use.—Anodyne; applied near the eye, it causes dilatation of the pupil.

Datura Plaster.

Preparation and use as above; effect nearly as powerful.

Cantharides Plaster.

Cantharides finely powdered one pound, wax plaster one pound and a half, lard half a pound.

Melt the lard and wax plaster together, and before they concrete, stir in the powdered flies.

Telini Plaster.

Prepared as above, using one-fourth less of the fly.

Use.—These are the ordinary blistering plasters. They are solid masses; in speading them they should be softened by the heat of the thumb or exposure to the sun, as a very moderate heat destroys the blistering principle.

Galbanum Plaster.

Galbanum eight ounces, lead plaster three pounds, gunda-barosa four ounces. The *gunda-barosa* is added instead of

the turpentine, and resin of the spruce fir directed by the London College.

Use.—A stimulant application to indolent tumours.

Lead Plaster.

Litharge finely powdered six pounds, poppy oil a gallon, water two pints. Boil together over a slow fire, constantly stirring till the oil and oxide unite into the consistence of a plaster. It may be necessary to add a little boiling water, if that previously used is all evaporated too soon.

Use.—This is one of the articles most consumed in Pharmacy, and enters into many other plasters.

Mercurial Plaster.

Mercury three ounces, lead plaster one pound, poppy oil one fluid drachm, sulphur eight grains. Prepare in the same manner as the mercurial plaster with ammoniacum.

Use.—The same as that of the article last mentioned, but the effect is less powerful.

Opium Plaster.

Hard opium half an ounce, gunda-barosa, hardened on the water bath, three ounces, lead plaster one pound, water eight fluid ounces. Melt the plaster, then add the other ingredients and mix, and heat by a gentle fire till they unite in a consistent mass.

Use.—Anodyne.

Pitch Plaster.

Gunda-barosa two pounds, dammar and wax each four ounces, expressed oil of nutmegs one fluid ounce, poppy oil and water each two fluid ounces. Melt the wax, dammar, and gunda-barosa together, when melted add the oil of

nutmegs, poppy oil and water; mix and boil down to a proper consistence.

Use.—An external stimulant and rubefacient. It is spread on leather or paper, the edges of which are made to fasten on the skin by adhesive plaster. It is a very useful application in chronic coughs, when applied to the chest, and it is usually left on for several days.

Resin Plaster.

Resin half a pound, lead plaster three pounds. Melt the plaster, and gradually add the powdered resin. Mix.

Use.—Stimulant.

Soap Plaster.

Soap sliced half a pound, lead plaster three pounds. Melt the lead plaster and mix in the soap, boil down to a fit consistence.

Use.—To indolent tumors, and to protect ulcerated or wounded parts.

Wax Plaster.

Wax and suet each three pounds, resin one pound. Melt together and strain.

Use.—An ingredient in blistering plaster.

PILLS AND POWDERS.

Pills.

Pillulæ.

Pills are round, soft, solid masses, not exceeding five grains each. They are generally sprinkled with magnesia or liquorice powder, to prevent their adhesion to each other.

They may be coated with gold or silver leaf by placing a leaf of the metal in the pill box, dropping on it the pills previously moistened with gum water, and then agitating strongly. This coating disguises the flavor without interfering with the medicinal effect.

Compound Aloetic Pill.

Aloes powdered an ounce, extract of gentian half an ounce, oil of carraway forty minims, syrup as much as may be necessary. Beat them together till they are mixed into a uniform mass.

The extract of *chiretta* or of *kurroo* may be substituted for that of gentian.

Use.—Aperient and tonic. *Dose*, fifteen to thirty grains, generally given with other remedies.

Pills of Aloes and Myrrh.

Aloes, saffron and myrrh, each half an ounce, syrup as much as required. Mix well into one mass.

Use.—Stimulant and aperient. *Dose*, ten to thirty grains.

Pills of Aloes and Soap.

Socotorine aloes and Castile soap equal parts, conserve of red roses a sufficiency. Beat into a mass.

Use.—A very valuable aperient in cases of habitual costiveness. *Dose*, five to twenty grains.

Pills of Aloes and Asafœtida.

Aloes, asafœtida and soap, equal parts. Make into a pill mass with conserve of roses.

Use.—Given as an aperient and antispasmodic in hysteria, chlorosis, amennhorrea, &c. *Dose*, ten to twenty grains.

Pills of Aloes and Iron.

Sulphate of iron thirty-six grains, aloes twenty-four grains, aromatic powder seventy grains, conserve of red roses one hundred grains. Mix, divide the mass into forty-eight pills.

Use.—Aperient and tonic. *Dose*, five grains to one scruple.

Pills of Asafœtida and Pepper.

Asafœtida, black pepper and opium each one scruple; beat well together, and divide into twelve pills.

Use.—This is well known in Bengal as Colonel Galloway's Cholera Pill. It is a very valuable remedy, and often succeeds in arresting the progress of this disease. *Dose*, five grains, or one pill, repeated in an hour if required.

Compound Gamboge Pill.

Gamboge powdered a drachm, aloes powdered a drachm and a half, ginger powdered half a drachm, soap two drachms. Mix the powders, add the soap, and then make into a uniform mass.

Use.—A strong purgative. *Dose*, ten to twenty grains.

Compound Hemlock Pill.

Extract of hemlock five drachms, ipecacuanha powdered a drachm, gum mixture as much as required. Mix well.

Use.—Diaphoretic and sedative. *Dose*, five to ten grains thrice daily.

Compound Iron Pill.

Pil. Ferri Compositæ.

Myrrh two drachms, carbonate of soda, sulphate of iron and treacle each a drachm; rub the myrrh and carbonate of soda, then the sulphate of iron, lastly the treacle.

Carbonate of iron and sulphate of soda are formed in this process. These pills should not be kept long, as they harden and turn red owing to the change of the carbonate into the sesqui-oxide of iron. *Use.*—Tonic, stimulant. *Dose,* ten to thirty grains.

Compound Galbanum Pill.

Galbanum, myrrh and sagapenum each an ounce and a half, asafœtida half an ounce, syrup as much as necessary. Beat into a uniform mass.

Use.—Stimulant, emennagogue. *Dose,* ten to twenty grains.

Mercurial Pill.

Pillula Hydrargyri.

Mercury two drachms, confection of red roses three drachms, liquorice powdered a drachm; rub the mercury with the confection till no globules can be seen, then add the liquorice, and beat together into a uniform mass.

Use.—Alterative in doses of from four to six grains. If this be repeated frequently, salivation ensues. The addition of opium renders this effect more certain and speedy. Purgative in doses of ten to twenty grains.

Compound Calomel Pill.

Calomel and red sulphuret of antimony each two drachms, guaiac resin half an ounce, treacle two drachms; rub the calomel and red sulphuret, then the guaiac resin, lastly the treacle, and beat into a mass.

Use.—Alterative. *Dose,* five to twenty grains.

Pills of Calomel and Opium.

Calomel twenty-four grains, opium eight grains, conserve of roses a sufficiency; beat into a mass and divide into twelve pills.

Use.—To salivate or rather to induce the action of mercury rapidly this is perhaps the best formula; one pill to be given every second or third hour.

Pills of Calomel and Colocynth.

Calomel half a drachm, compound extract of colocynth one drachm, oil of carraway six minims. Mix and divide into eighteen pills.

Use.—This formula constitutes the "Cholera Pill" of the Medical Board. A dose is to be given in four to five hours after the disease has abated.

Pills of Calomel and Antimony.

Calomel three grains, antimonial powder two grains, extract of liquorice (or goonch) one grain. Beat into a mass.

Use.—This is a useful prescription, much employed by Dr. Duncan Stewart in the treatment of the febrile diseases of young persons. It is termed the "College Pill" in the *H. Co.'s Dispensary*.

Colocynth Pills.

Aloes and scammony each eight parts, colocynth pulp in powder four parts, sulphate of potash powdered, and oil of cloves, each one part.

Mix the powders, add the oil of cloves, and beat into a mass with a sufficient portion of rectified spirit.

The Bengal colocynth should be employed.

Use.—The mixture is a very good and efficient purgative, especially in Hospital practice. *Dose*, ten to fifteen grains.

Compound Ipecachuan Pills.

Compound ipecachuan powder three drachms, squill, ammoniacum each a drachm, gum mixture a sufficiency; incorporate well together.

Use—A powerful diaphoretic. *Dose*, ten grains at night.

Pills of Opium and Acetate of Lead.

Acetate of lead seventy-two grains, Bengal opium twenty-four grains, conserve of red roses as much as sufficient. Make into a mass and divide in twenty-four pills.

Use.—A most effectual anodyne and astringent, of great value in incipient cholera, and in both acute and chronic dysentery. Each pill contains one grain of opium and three of acetate of lead.

Pills of Kaladana.

Extract (alcoholic) of kaladana a drachm, oil of cloves four drops. Beat well together, and divide into twelve pills.

Use.—An excellent cathartic. *Dose*, ten to twenty grains.

Compound Rhubarb Pills.

Pil. Rhei Comp.

Powdered rhubarb one ounce, aloes six drachms, myrrh half an ounce, soap a drachm, essential oil of cubebs half a fluid drachm, syrup as required.

Use.—Laxative. *Dose*, ten to twenty grains.

Compound Sagapenum Pills.

Sagapenum an ounce, aloes half a drachm, syrup of ginger as much as sufficient; incorporate together.

Use.—A warm laxative. *Dose*, five to ten grains.

Compound Soap Pill.

Hard opium powdered half an ounce, soap two ounces incorporate together.

Use.—Narcotic. *Dose*, three to ten grains; it contains one-fifth of opium.

Compound Squill Pills.

Squill powdered a drachm, ginger powdered and ammoniacum powdered, each two drachms, soap three drachms, syrup as much as necessary. Mix the powders, then beat with the soap, and add the syrup. Beat into a uniform mass.

Use.—Expectorant and diuretic. *Dose,* ten to twenty grains.

Compound Storax Pill.

Storax melted and strained three drachms, hard opium powdered and saffron each a drachm. Beat into a uniform mass.

Use.—Slightly expectorant. *Dose,* three to ten grains.

POWDERS.

Pulveres.

Compound Powder of Aloes.

Aloes an ounce and a half, guaiac resin an ounce, compound powder of cinnamon half an ounce. Mix.

Use.—Aperient and diaphoretic. *Dose,* ten to twenty grains.

Compound Powder of Cinnamon.

Cinnamon two ounces, cardamoms one ounce and a half, long pepper half an ounce. Rub into a very fine powder.

Use.—Aromatic and stimulant. *Dose,* five to ten grains.

Aromatic Powder.

Cinnamon, cardamoms and ginger in powder, each equal parts. Mix and preserve in well stoppered bottles.

Use.—Aromatic, seldom given alone, but very often added to other formulæ to prevent griping, disguise unpleasant flavour, or to prove gently stimulant.

Compound Chalk Powder.

Prepared chalk half a pound, cinnamon four ounces, rohun bark powdered, gum arabic each three ounces, long pepper half an ounce. Rub separately to a fine powder and mix.

Use.—Astringent and antacid. *Dose*, five to thirty grains, much given to children, and often added to other powders. It should not be used with acids or iron preparations. Powdered *Rohun* bark is substituted for the Tormentil of the London Pharmacopœia, which is only used for its astringency.

Compound Chalk Powder with Opium.

Pulv. Cretæ Comp. cum Opio.

Compound chalk powder six ounces and a half, hard opium in powder four scruples. Mix well.

Use.—Astringent, antacid and slightly narcotic, forty grains contain one grain of opium. *Dose*, five to thirty grains, not to be prescribed with acids, acidulous salts, or preparations of iron.

Compound Powder of Jalap.

Jalap three ounces, bi-tartrate of potash six ounces, ginger two drachms. Mix.

Use.—An excellent purgative. *Dose*, twenty to forty grains.

Compound Powder of Kaladana.

Kaladana seed finely powdered, bi-tartrate of potash each three ounces, ginger two drachms. Mix.

Use.—An efficient substitute for the above. *Dose*, thirty grains to one drachm. The seeds of the kaladana are found in all the bazars. This powder is much less nauseous than the compound powder of Jalap.

Compound Ipecacuanha Powder.

Pulv. Ipecacuanhæ Comp.

(Common name, *Dover's Powder.*)

Ipecacuanha and hard opium each one drachm, sulphate of potash powdered, one ounce. Mix well.

The sulphate of potash is merely added from its hardness to effect the finer subdivision of the other ingredients.

Use.—This preparation is perhaps our best and most certain sudorific, and is of the greatest value in the treatment of many forms of rheumatism and dysentery. *Dose*, five grains to twenty grains. If the ordinary opium of Bengal be used, one third more than the quantity above directed should be employed in the preparation of this powder.

Compound Powder of Mudar.

As above, substituting for ipecacuanha twice the quantity of the powdered mudar.

Use.—When a supply of ipecacuanha is not obtainable, this article will be found a moderately good substitute. Many practitioners attribute to the mudar specific utility in the treatment of several cutaneous diseases and leprosy.

Kutkuleja Powder.

Kutkuleja nut shelled and finely powdered, black pepper powdered, each one drachm. Mix intimately.

Use.—Tonic and febrifuge, given in ague with decided benefit. *Dose*, six to twenty grains three times daily.

Compound Rhubarb Powder.

(Commonly called *Gregory's Powder.*)

Magnesia one pound, ginger in fine powder two ounces, rhubarb ditto four ounces, preserve in well closed bottles.

Use.—A very valuable antacid and aperient, much given to children. *Dose*, five grains to one drachm according to age and circumstances.

Compound Kino Powder.

Kino fifteen drachms, cinnamon half an ounce, hard opium one drachm. Mix intimately.

For *Kino* the palass goond, or Bengal kino, may be substituted.

Use.—Aromatic, astringent and sedative. *Dose*, five to twenty grains. Twenty grains contain one grain of opium.

Kuchila-Mulung Powder.

Kuchila-mulung leaf powdered one scruple, white sugar in powder two scruples. Mix intimately, and divide into sixty papers.

Use.—A powerful convulsive tonic, producing the same effects as the strychnic and brucinic preparations. Each powder contains one-third of a grain. *Dose*, one powder gradually increased.

Compound Scammony Powder.

Scammony, hard extract of jalap, each two ounces, ginger half an ounce. Powder and mix.

Hard extract of kaladana may be substituted for that of jalap.

Use.—An excellent purgative. *Dose*, five to twenty grains.

Compound Tragacanth Powder.

Tragacanth, gum arabic, and starch, each one ounce and a half, sugar three ounces. Mix.

Picked pieces of gum katira and babul gum may be substituted for the tragacanth and gum arabic.

Use.—As a demulcent in colds and irritation of the throat and air passages, also in slight diarrhœa and in chronic dysentery. *Dose*, ten grains to one drachm.

Worm Seed Powder.

Indian worm seed (*Saheba*) finely powdered and sifted.

Use.—A popular worm remedy, especially in the round and long worm of children. *Dose*, three to ten grains given in honey or milk.

SYRUPS.

Syrups are solutions of sugar in water, usually associated with some active medicinal substance. Their chief utility seems to be for the exhibition of remedies in a rather agreeable form, or for the communication of a sweet or pleasant flavour to other mixtures. Syrups readily ferment, and form alcohol and vinegar. The rapidity with which this change occurs in India is so great, that syrups should always be prepared as required from day to day.

Simple Syrup.

Sugar (white) one pound, water six fluid ounces. Dissolve with a gentle heat.

Syrup of Marsh Mallow.

Syrupus Altheæ.

Marsh mallow root one ounce, sugar four ounces, water ten fluid ounces. Boil the water with the root to one-half, press, allow it to cool and settle, pour off the liquor, add the sugar and boil down.

Use.—A mucilaginous demulcent.

According to this formula and for the same purposes, prepare Syrup of Soofed moosli root, —— of dried Hibiscus capsules, *(okra)*, —— of Asparagus sarmentosus, (*soota moolli)*, —— of Bilva fruit, *(bel.)*

These syrups all spoil very readily.

Syrup of Orange Peel.

Syrupus Aurantii.

Fresh orange peel two ounces and a half, boiling water one pint, sugar three pounds. Macerate the peel in the water for twelve hours, pour off the liquor, and add the sugar.

Use, for its agreeable flavour.

Syrup of Saffron.

Syrupus Croci.

Saffron ten drachms, boiling water a pint, sugar three pounds. Prepared as above.

This preparation is exclusively used for its fine colour.

Syrup of Lemons.

Syrupus Limonum.

Lemon juice strained a pint, sugar two pounds. Dissolve, set aside for twelve hours, and remove any scum; decant if there be a sediment.

Use.—A pleasant acid syrup used for effervescing draughts, especially with the solution of bi-carbonate of magnesia.

Syrup of Mulberries.

Syrupus Mori.

Mulberry juice strained a pint, sugar two pounds and a half. Prepare as above. It is used for the same purpose, and has a fine red colour.

Syrup of Poppy Heads.

Syrupus Papaveris.

Poppy heads without seeds one pound, sugar two pounds, boiling water ten pints. Boil down the capsules in the water to one-third and press strongly, strain and boil down again to one-sixth the original quantity, and strain while hot. Allow the dregs to settle; decant, and dissolve the sugar by a gentle heat.

Use.—Slightly anodyne. *Dose*, one fluid drachm to a fluid ounce. It is chiefly given to young children. It spoils so readily in India, being changed into vinegar, that it usually does more harm than good.

Syrup of Red Poppy.

Syrupus Rhœados.

Red poppy petals one pound, boiling water one pint, sugar two pounds and a half. Add the petals gradually to the water, stirring constantly, then macerate for some hours; press. When clear add the sugar.

Use.—Solely for its fine red colour.

Syrup of Roses.

Damask rose petals dried seven ounces, sugar six pounds, boiling water three pints. Macerate the petals in the water for twelve hours, strain, evaporate to two pints, add the sugar.

Use.—Very slightly aperient. *Dose,* two fluid drachms to one ounce.

Syrup of Sarsaparilla.

Syrupus Sarzæ.

Sliced sarsaparilla fifteen ounces, boiling water one gallon, sugar fifteen ounces. Macerate the root in the water for six hours, strain, boil down to four pints, strain while hot, add the sugar, and evaporate to the consistence of syrup.

According to the same formula prepare—

Syrup of Hemidesmus.—(*Ununtamul.*)

Syrup of China Root.—(*Chob Chinee.*)

Use.—These three preparations are alterative and diuretic, and are used to sweeten the decoctions and infusions of the same articles.

Syrup of Senna.

Senna two ounces and a half, fennel bruised(*a*) ten drachms, manna(*b*) three ounces, sugar fifteen ounces, boiling water

one gallon. Macerate the senna and fennel in the water at a gentle heat for an hour, mix the manna and sugar with the strained liquor, boil to a proper consistence.

(*a b*) The *Panmuhori* and *Turunjabin* may be used where procurable.

Use.—Purgative. *Dose,* for children two to four fluid drachms.

Syrup of Tolu.

Balsam of tolu ten fluid drachms, boiling water a pint, sugar two pounds and a half. Boil the balsam in the water for half an hour, frequently stirring, strain the cooled liquor, and add the sugar.

Use.—For its pleasant flavour.

Syrup of Vinegar.

Syr. Aceti.

French vinegar eleven fluid ounces, pure sugar fourteen ounces. Boil together in a porcelain vessel.

Use.—For its agreeable flavour.

Syrup of Ginger.

Syr. Zingiberis.

Ginger sliced two ounces and a half, boiling water a pint, sugar two pounds and a half. Macerate the ginger in the water for four hours, strain and add the sugar.

Use.—Stimulant and aromatic, a good addition to many purgative and bitter mixtures.

Syrup of Squill.

Vinegar of squill three pints, sugar seven pounds. Dissolve by a gentle heat in a porcelain vessel.

Use.—A good nauseant remedy for children, much given in hooping cough. *Dose,* a tea spoonful and upwards.

Syrup of Kanoor.

Syr. Crini.

Fresh kanoor sliced eight ounces, boiling water one pint, sugar one pound. Macerate the kanoor in the water for two hours, beat in a mortar, press through calico, and then dissolve the sugar.

Use.—Nauseant and emetic for children. *Dose*, a desert spoonful repeated as required.

SPIRITS.

Spirit of Ammonia.

Rectified spirit two pints, caustic lime twelve ounces, muriate of ammonia finely powdered eight ounces, water six and a half ounces. Slake the lime when the powder is cold, mix it thoroughly and quickly with the muriate of ammonia, and introduce into a glass retort. Heat this in a sand bath, and let the disengaged gas pass through the spirit by a bent tube. The bottle should be kept cool, and be capable of holding three pints.

The receiver should be kept very cold. If ice cannot be procured, advantage may be taken of this process for refining the crude bazar *Nowshader*, or muriate of ammonia, by dissolving this around the receiver.

This preparation belongs to the Edinburgh College, and is far superior to that of London. According to the London formula carbonate of ammonia is formed, which is insoluble in the spirit. In the process we adopt, pure gaseous ammonia is conducted through the spirit till this is saturated.

Spirit of ammonia thus prepared is a transparent, colourless solution, excessively pungent and alkaline.

Use.—An external stimulant of great power, and an ingredient in the aromatic and fœtid spirits of ammonia.

Aromatic Spirit of Ammonia.

Spirit of ammonia eight fluid ounces, oil of lemon peel one fluid drachm, oil of rosemary(*a*) one fluid drachm and a half. Dissolve by agitation.

(*a*) Half a drachm of oil of cloves may be substituted.

Use.—A powerful stimulant. *Dose*, half a fluid drachm to one drachm in two fluid ounces of water. In the London preparation muriate of ammonia, carbonate of potash, cinnamon, cloves, lemon peel, rectified spirit and water are all mixed together and distilled. The result is a product of comparatively disagreeable flavour, and containing carbonate of ammonia instead of the pure alkali.

Fœtid Spirit of Ammonia.

Spirit of ammonia ten fluid ounces and a half, asafœtida half an ounce. Digest the asafœtida in the spirit for twelve hours, and distil over ten and a half fluid ounces from a retort by a water bath.

Properties.—Colorless, acrid, fœtid.

Use.—Stimulant and antispasmodic. *Dose*, half a fluid drachm to one drachm in water.

Spirit of Anise.

Anise seed bruised ten ounces, proof spirit one gallon, water two pints. Mix and distil a gallon.

This is a solution of essential oil of aniseed in spirit.

Use.—Cordial and antispasmodic. *Dose*, two to four fluid drachms in water.

The *Star anise, (Badian Katai,)* may be used instead of common anise.

Spirit of Caraway.

Caraway bruised twenty-two ounces, proof spirit one gallon, water two pints. Mix, let a gallon distil.

Use.—Cordial, stimulant. *Dose*, two to four fluid drachms.

Spirit of Cinnamon.

Cinnamon oil two fluid drachms. Prepare as above.

Use and *dose* the same.

Remarks.—The oil of cinnamon is preferred to using the bark itself, from the uncertain strength of the latter. When this is of good quality, use a pound of the bruised bark to seven pints of proof spirit, macerate for a day in a covered vessel, and distil off seven pints.

Compound Spirit of Juniper.

Juniper berries bruised twenty ounces, caraway bruised and fennel each two ounces. The *Panmuhori* may be substituted for the fennel. Prepare as the spirit of caraway.

Use.—Stimulant, diuretic. *Dose,* two to four fluid drachms.

Spirit of Lavender.

Fresh lavender two pounds and a half. Prepare as above.

Use.—Not given by itself internally; an ingredient in compound camphor liniment and compound tincture of lavender.

Spirit of Peppermint.

Sp. Menthæ Piperitæ.

Oil of peppermint three fluid drachms. Prepare as the spirit of cinnamon.

Use.—Cordial, especially in flatulence. *Dose,* two to four fluid drachms.

Spirit of Spearmint.

Sp. Menthæ Viridis.

Oil of spearmint three fluid drachms. Prepare as above.

Use and *dose,* the same as of the last article.

Spirit of Penny-Royal.

Sp. Menthæ Pulegii.

Oil of penny-royal three fluid drachms. Prepare as above.

Use and *dose,* the same.

Spirit of Nutmeg.

Sp. Myristicæ.

Bruised nutmeg two ounces and a half. Prepare as above.

Use and *dose,* the same.

Spirit of Pimenta.

Bruised pimenta half a pound. Prepare as the spirit of caraway.

Use and *dose*, the same.

Spirit of Rosemary.

Oil of rosemary two fluid drachms. Prepare as above.

Use.—An ingredient in the soap liniment, and compound tincture of lavender.

Compound Spirit of Sohunjuna.

Sohunjuna sliced and dried, orange peel each twenty ounces, bruised nutmegs five drachms, proof spirit one gallon, water two pints. Mix and distil a gallon.

Use.—Stimulant. *Dose*, two to four fluid drachms in water.

TESTS.

Ammonia, Oxalate of.

Oxalic acid four drachms, carbonate of ammonia eight drachms, distilled water ten fluid ounces. Dissolve the carbonate in the water, add the acid by degrees, and concentrate the liquid to crystallization.

The oxalic acid is most readily prepared by the action of nitric acid on half its weight of fine sugar in powder; half the acid should be poured on the sugar, and when the action of this portion has ceased, the resulting fluid should be concentrated on the water bath to one-fourth, and allowed to cool. Crystals of oxalic acid are deposited, and these should be removed and dried by compression between folds of porous paper. To the remaining liquor add the second portion of the nitric acid, and proceed as before.

The oxalate of ammonia is much used as a test for lime, with which it yields a white insoluble white precipitate. When this is collected and dried on the water bath, 64 parts correspond to 28 of lime.

Ammonia, Hydrosulphuret of.

For the preparation of this test, a current of sulphuretted hydrogen gas is conducted through a solution of water of ammonia. The gas is generated by acting on a mixture of proto-sulphuret of iron and water by dilute sulphuric acid. The current of gas should be continued so long as the bubbles passing through the ammonia diminish in size as they ascend. The double-necked bottle, figured in *plate* 5, *fig.* 41, *Bengal Dispensatory*, provided with a bent tube, is the best apparatus for this process.

The hydro-sulphuret of ammonia is a valuable test, which gives coloured precipitates with several metallic solutions, thus:—

Solutions of.		*Colour.*	*Distinguished.*
Arsenic, ...	(Solution acidulated with acetic acid,)	Yellow.	
Antimony, ..	(Ditto with tartaric acid,)	Orange.	
Bismuth, ..	(Neutral,).....	Black, ..	Turned white by nitric acid.
Copper, ...	(Neutral or acid,)	Black, ..	Turned green by nitric acid.
Iron, ...	(Neutral,).....	Black, ..	Soluble in dilute sulphuric acid.
Mercury, ..	(Neutral or acid,)	Black, ..	Volatilized by heat.
Lead, ...	(Neutral or acid,)	Black, ..	Insoluble in sulphuric acid and not volatilized by heat.
Zinc, ...	(Exactly neutral,)	White, ..	

Ammonia, Nitrate of

To nitric acid diluted with twice its volume of water, add small pieces of carbonate of ammonia till effervescence ceases: and then evaporate on the water bath to dryness.

This salt is employed in testing to effect the combustion of organic matter, to which it gives off oxygen freely and thus causes its dissipation without leaving any residue itself.

Baryta, Nitrate of

For the preparation of this test, see the salts of baryta.

It is used to detect and estimate the quantity of sulphuric acid, free or combined, in a solution. Being dissolved in water and the solution added drop by drop till precipitation ceases, all the sulphuric

acid combines with the baryta and subsides as a heavy white powder, insoluble even in nitric acid. Of this when washed with water acidulated with nitric acid, and dried on the water bath, 116 parts are equivalent to 40 of real sulphuric acid.

Ioduret of Potassium.

(*For Preparation, see that head.*)

This salt gives a brilliant yellow precipitate with salts of lead, which when dissolved in boiling water, crystallizes on cooling in shining spangles like gold-leaf.

Ferro-Cyanuret of Potassium.

Take any convenient quantity of animal matter, especially wool, hair, skin, or eggs. Calcine at a low red heat in an iron vessel, provided with a tube for the discharge of the gases. Of the animal charcoal thus prepared, take two parts by weight, of dry carbonate of potash one part, and add about four per 100 by weight of iron filings. Mix well together, and throw the mixture into a red hot iron crucible, provided with a lid which should be at once applied. Every ten minutes remove the lid and stir the mixture well with an iron rod. Continue this until the vapour does not inflame on uncovering the crucible. Remove the fused mass with an iron ladle, and place it in small heaps in order to cool it rapidly. Then introduce it into a pan of cold water, heat gently, and strain through calico.

To this solution add a solution of green sulphate of iron, (*heera kasis*) so long as a white precipitate is formed and redissolved. Now evaporate to crystallization.

The ferro-cyanuret of potassium crystallizes in beautiful yellow rhomboidal masses with thin bevelled edges, of slightly bitter taste, inodorous, efflorescent at 110°, and losing all their water of crystallization and falling into a white powder at 212°. The crystallized salt contains—

1 eq. Cyanide of Iron,	.. ..	= 54
2 eqs. Cyanide of Potassium,	.. .. ..	= 132
3 eqs. Water,	.. ..	= 27

This salt is very soluble in water, insoluble in alcohol, unaffected by alkalies, decomposed by sulphuric acid, the hydrocyanic acid being formed and disengaged. When added to metallic solutions, it in many cases effects their decomposition, a triple compound of one equivalent of cyanogen and iron (ferro-cyanogen) with two of cyanide of the metal, being formed. These metallic ferro-cyanurets are of different, often brilliant, colours, and from this property it is that this salt becomes so valuable to the experimental chemist. With solutions of the pharmaceutical metals, the precipitates are as follow:—

Silver, mercury, bismuth, lead, zinc, *white*.

Copper, chesnut-brown; iron, proto-salts whitish, ditto per-salts Prussian-blue.

By passing a current of chlorine gas through a solution of this salt until it ceases to precipitate the *per*-salts of iron *blue*, we obtain a green liquid, which on evaporation affords the *red* or ferro-sesqui-cyanuret of potassium in small ruby-red crystals, soluble in water, and affording a test still more useful than the yellow salt; thus it yields with—

Solutions of—	*Precipitates.*
Mercury, Silver, Zinc,	White.
Copper, Bismuth,	Yellowish-brown.
Iron, *proto*-salts,	Prussian-blue.
—— *per*-salts,	*None.*

It is a very remarkable fact in the history of these salts, that the iron they contain cannot be detected in them by the ordinary tests, such as ammonia and the tincture of galls.

We have given the preceding details in order to enable the Apothecary to prepare for himself the material from which Hydrocyanic acid is procured. The process is to a certain extent troublesome, and may fail on the first attempt, but a little perseverance will soon render it invariably successful, even when no more than one pound of the animal charcoal is employed.

Solution of Nitrate of Silver.

Nitrate of silver forty grains, distilled water sixteen hundred grains. Dissolve.

This solution is employed as a test for detecting and estimating the quantity of chlorine, free or combined, in a given solution.

On adding this solution to one containing any chloride, (say that of sodium, common salt,) double decomposition ensues, and a white precipitate of *chloride of silver* is formed. This precipitate is insoluble in water or nitric acid, but is freely dissolved by ammonia. Washed and dried on the water bath, 144 parts are equivalent to 108 silver and 36 chlorine, or to 60 of common salt.

Solution of Ammoniaco-Nitrate of Silver.

Take the solution above prepared and add water of ammonia drop by drop till the precipitate at first formed is nearly, but not altogether, dissolved.

This test affords a brilliant yellow precipitate, with solutions containing the common white arsenic, *arsenious acid.*

Solution of Ammoniaco-Sulphate of Copper.

Take a strong solution of sulphate of copper, and add ammonia gradually until the precipitate occasioned is nearly re-dissolved.

This test gives a fine green precipitate (Scheele's green,) with solutions of *arsenious acid.* For the precautions to be observed in applying these tests, *see Bengal Dispensatory, Article Poisons, p.* 726.

Sulphate of Indigo.

Boil some powdered Indigo with strongest sulphuric acid, till a fine blue liquid is produced.

This liquid added to water so as to give it a fine transparent blue colour, is used as a test to detect free *chlorine,* by which the blue liquid is instantly bleached.

TINCTURES.

Tinctures are solutions of medicinal substances in spirit of various degrees of strength.

Tinctures usually contain the resinous and alkaloid principles of the substances from which they are prepared.

Tinctures are prepared by infusion and trituration, prolonged contact, boiling and percolation. In some cases the last method is of great advantage over the others.

Excess of spirit should be avoided in the preparation of tinctures, as the effect of the spirit may interfere with the medicinal action of the substances it dissolves.

Preparation of Tinctures by displacement or filtration.

In this process the spirit is filtered through a mass of the substance under preparation, previously powdered and made into pulp with spirit. A mass of this pulp is pressed into a cylinder, closed below by a piece of strong cloth firmly tied on. The pulp may occupy one-third of the cylinder, and over it is poured the remainder of the spirit to be used. When the filtration ceases, an additional quantity of the solvent is poured on to *displace* that retained in the interstices of the pulp. The tincture which passes through, must equal the quantity of the spirit directed in each formula. The last portion of spirit ordered may be recovered, by pouring water over the mass, and thus forcing the spirit through.

This plan, for some years extensively followed by continental apothecaries, has been lately advised by the Edinburgh College. It is certainly the best mode of preparing a great many tinctures, being more expeditious and productive than the common plan. But there are many substances, opium for example, which cannot be treated in this manner, and special directions are therefore given under each head.

Boiling.—Tinctures may be very expeditiously prepared by *boiling* the substance with a portion of the spirit. This process is especially useful, where small quantities of a particular substance are urgently required. But on a very large scale, such as in the Government Dispensary, the old mode is preferable. The risk from fire inseparable from numerous and large operations with hot spirit, is a sufficient reason for this preference.

Tincture of Aloes.

Aloes in powder one ounce, extract of liquorice (*a*) three ounces, water a pint and a half, rectified spirit half a pint. Triturate with the water, add the spirit, and strain.

The maceration for fourteen days directed by the London College is unnecessary.

(a).—Extract of *goonch* may be substituted for the liquorice.
Use.—Purgative. *Dose*, half a fluid ounce to one ounce.

Compound Tincture of Aloes.

Aloes powdered four ounces, saffron two ounces, tincture of myrrh two pints.

Triturate the aloes and saffron with half a pint of the spirit separately, gradually add more spirit, and lastly the tincture of myrrh; strain.

Medical Use.—Purgative and stimulant. *Dose*, one to two fluid drachms.

Compound Tincture of Ammonia.

(Commonly called *Eau-de-luce.*)

Mastich two drachms, rectified spirit nine fluid drachms, oil of lavender fourteen minims, oil of amber four minims, strong solution of ammonia one pint. Dissolve the mastich in the spirit and agitate all together. The oil of amber may be omitted, and that of lemons substituted for the oil of lavender.

Use.—*Eau-de-luce* is a milky fluid of strongly ammoniacal smell. It is a powerful stimulant, and is much used in the treatment of snake-bites. *Dose*, five to ten minims in water. It should not be given with acids, metallic, or earthy salts.

Tincture of Asafœtida.

Asafœtida five ounces, rectified spirit two pints. Triturate the asafœtida with half a pint of the spirit, gradually add the rest, agitate in a stoppered bottle for a quarter of an hour, strain.

Use.—Stimulant and antispasmodic. *Dose*, one to two fluid drachms.

Tincture of Barberry.

Barberry bark powdered coarsely eight ounces, proof spirit two pints; moisten the bark with a little of the spirit for six hours, then percolate the rest of the spirit.

Use.—Febrifuge, tonic, and aperient. *Dose*, two fluid drachms to four drachms.

Tincture of Cinchona Bark.

Cinchona bark bruised eight ounces, proof spirit two pints. Prepare by percolation.

Use.—Febrifuge, tonic. *Dose*, one to four fluid drachms.

Compound Tincture of Bark.

Cinchona bark bruised four ounces, orange peel (dry) three ounces, serpentary (*a*) bruised six drachms, saffron two drachms, cochineal powdered one drachm, proof spirit two pints. Prepare by percolation, as the compound tincture of cardamom.

(*a*) The Assam sassafras root may be substituted for the serpentary, and the cochineal omitted.

Use.—The same as the simple tincture, but more stimulating.

Tincture of Tolu Balsam.

Balsam of tolu two fluid ounces, rectified spirit two pints. Mix and agitate to solution and strain.

Use.—Expectorant, given in cough mixtures.

Compound Tincture of Benzoin.

Benzoin three ounces and a half, storax purified two ounces and a half, balsam of tolu ten drachms, aloes five drachms, rectified spirit two pints. Dissolve the aloes by trituration with half a pint of the spirit, and add the tolu balsam; treat the benzoin and storax similarly by trituration and agitation in a stoppered bottle. Mix the whole, and agitating occasionally, filter after one day's maceration.

Use.—Expectorant, stimulant. *Dose*, one to two drachms. Like all resinous tinctures, it is decomposed by water. Formerly it was much used as an application to wounds and ulcers, under the name of the "*Friar's Balsam.*"

Tincture of Buchu.

Buchu leaves dried and powdered two ounces and a half, proof spirit one pint. Prepare by percolation.

Use.—An astringent diuretic, valuable in chronic diseases of the urinary organs. *Dose*, one to two fluid drachms.

Tincture of Calumba.

Grated calumba three ounces, proof spirit two pints. Prepare by percolation, or mix and agitate occasionally for a day, strain.

Use.—Bitter, tonic. *Dose*, one fluid drachm to two drachms.

Tincture of Mishme Teeta.

Mishme teeta root powdered three ounces, proof spirit two pints. Prepare as above.

Use and Dose, the same; flavour and colour much more agreeable.

Tincture of Camphor.

Camphor five ounces, rectified spirit two pints. Mix and dissolve.

Use.—As an external application in rheumatism, partial paralysis, &c. It is decomposed by water.

Compound Tincture of Camphor.

Camphor two scruples and a half, hard opium and benzoic acid each seventy-two grains, oil of anise one drachm, proof spirit two pints. Triturate the solid ingredients with half a pint of the spirit, strain.

Use.—Anodyne and diaphoretic. *Dose*, one to three fluid drachms. A fluid ounce contains about two grains of opium.

Tincture of Cantharides.

Bruised cantharides four drachms, proof spirit two pints; prepare by percolation or by agitation in a stoppered bottle.

Tincture of Telini.

Telini fly three drachms, proof spirit two pints; prepare as above.

Use.—Both these preparations are used chiefly as external stimulants and blisters; also given in doses of ten minims in mucilage for gonorrhœa, incontinence of urine, leucorrhœa, and similar diseases. It is a very dangerous internal remedy.

Tincture of Capsicum.

Capsicum (dried) bruised ten drachms, proof spirit two pints. Boil the capsicum in half a pint of the spirit in a flask for ten minutes, strain, and add the rest of the spirit.

Use.—Stimulant. *Dose*, ten minims to one drachm with water. A useful application to relaxed uvula.

Tincture of Cardamoms.

Cardamoms bruised three ounces and a half, proof spirit two pints. Boil the cardamoms in one pint of the spirit for ten minutes, strain on cooling, and add the rest of the spirit. This tincture may also be well made by percolation.

Use.—Stimulant, cordial. *Dose*, one to two fluid drachms.

Compound Tincture of Cardamoms.

Cardamoms and caraway bruised each two drachms and a half, cochineal powdered half a drachm, cinnamon bruised five drachms, raisins deprived of their seeds five drachms, proof spirit two pints. Prepare by percolation or agitation, and after one day, strain.

The cochineal is merely to give a colour to the mixture, and may be omitted or replaced by an equal weight of red Sanders wood *(rukta-chundun)*; for the raisins half their weight of white sugar may be advantageously substituted.

Use.—An excellent cordial aromatic, much given with bitters, such as gentian and chiretta. *Dose*, one to two fluid drachms.

Tincture of Cascarilla.

Cascarilla bruised five drachms, proof spirit two pints. Best prepared by percolation.

Use.—Tonic, stomachic, and febrifuge. *Dose*, one fluid drachm to two drachms.

Tincture of Castor.

Castor powdered two ounces and a half, rectified spirit two pints. Prepare by agitation or percolation.

Use.—Antispasmodic. *Dose*, half a fluid drachm to two drachms.

Tincture of Catechu.

Catechu three ounces and a half, cinnamon bruised two ounces and a half, proof spirit two pints. Prepare by percolation. Or, boil the cinnamon with half a pint of the spirit for ten minutes in a flask. Bruise the catechu with half a pint of the spirit, and add the spirit in which the cinnamon was boiled. Agitate with the remainder of the spirit in a stoppered bottle occasionally for two hours.

Use.—Astringent and stimulant. *Dose*, one fluid drachm to four drachms.

Tincture of Cinnamon.

Cinnamon bruised three ounces and a half, proof spirit two pints, boil for ten minutes with one pint of the spirit, strain; add the rest of the spirit to that in which the cinnamon was boiled.

Use.—Stimulant, and as an adjunct to bitter remedies, or to those which are apt to occasion griping.

Compound Tincture of Cinnamon.

Cinnamon bruised one ounce, cardamoms bruised half an ounce, long pepper powdered, ginger sliced, each two

drachms and a half, and proof spirit two pints. Prepare by percolation, or boil the solid materials for ten minutes in one pint of the spirit, strain and press, and add the rest of the spirit to the expressed liquor.

Use.—Cordial, stimulant. *Dose*, one to two fluid drachms.

Tincture of Colchicum.

Colchicum seeds, bruised, five ounces, proof spirit two pints; prepare by percolation.

Use.—In rheumatism and gout. *Dose*, twenty to thirty minims.

Tincture of Cubebs.

Cubebs, bruised, five ounces, rectified spirit two pints; prepare by percolation or agitation.

Use.—Stimulant and diuretic in gonorrhœa.—*Dose*, half a fluid drachm to one drachm.

Oleo-resinous Tincture of Cubebs.

Oleo-resinous extract of cubebs four ounces, rectified spirit a pint, dissolve.

Use.—The same as that of the ordinary extract, but this preparation is much more concentrated and effectual. *Dose*, one to two drachms or more according to the case. For the preparation of the oleo-resinous extract of cubebs, *see the Dispensatory, p.* 574.

Tincture of Digitalis.

Digitalis leaves, dried, four ounces, proof spirit two pints.

Prepare by percolation, or agitate occasionally in a stoppered bottle for a day and strain.

Use.—A powerful narcotic and diuretic, generally prescribed with tincture of squill, and often with tincture of opium; given chiefly in inflammation of the lungs, in aneurism, incipient pthisis and inflammatory dropsy. *Dose*, ten to thirty minims repeated twice or thrice daily. Its effect may remain latent in the system for several days, and then suddenly display itself with accumulated violence.

Tincture of Galls.

Galls bruised five ounces, proof spirit two pints; prepare by displacement.

Use.—A powerful astringent. *Dose*, twenty minims to one fluid drachm. A valuable test for salts of iron, which it blackens.

Tincture of Myrobalon.

Chebulic myrobalon powdered five ounces, proof spirit two pints; prepare as above.

Use.—The same.

Compound Mixture of Gentian.

Gentian sliced two ounces and a half, orange peel dried ten drachms, cardamoms, bruised, five drachms, proof spirit two pints. Prepare by percolation, or boil the gentian in eight ounces of the spirit for ten minutes in a glass flask. Agitate the orange peel and cardamoms with the cold spirit in a stoppered bottle for a quarter of an hour, mix the two solutions.

Use.—Bitter and cordial tonic. *Dose*, one to two drachms.

Compound Tincture of Chiretta.

Prepare as above.

Use and *Dose.*—The same.

Tincture of Guaiacum.

Guaiacum resin, bruised, seven ounces, rectified spirit two pints; triturate the resin gradually with half the spirit. Then agitate it repeatedly for half an hour with an ounce of powdered glass and the rest of the spirit in a stoppered bottle. Strain carefully through fine calico.

The glass is used to keep the resin from forming lumps during the agitation.

Use.—Stimulant, tonic, and diaphoretic. *Dose*, one to two fluid drachms.

Compound Tincture of Guaiacum.

Guaiacum resin, bruised, seven ounces, aromatic spirit of ammonia one pint, rectified spirit one pint.

Our aromatic spirit of ammonia being much stronger than the preparation called by that name in the London Pharmacopœia, we have substituted the above proportions for the two pints directed by the London formula.

Triturate the guaiacum resin with the pint of rectified spirit, and agitate for half an hour, then add the spirit of ammonia, and let the whole rest for a day before straining.

Use.—Stimulant, diaphoretic. *Dose*, half a fluid drachm to one drachm.

Tincture of Gulancha.

Gulancha stems, bruised, eight ounces, proof spirit two pints. Prepare as the Tincture of Barberry.

Use.—Tonic and febrifuge. *Dose*, two to four fluid drachms, repeated as required.

Compound Tincture of Gurjun.

Essential oil of gurjun, one fluid drachm, essential oil of cubebs one fluid drachm, spirit of nitrous ether one fluid ounce. Dissolve.

Use.—An efficient substitute for "Frank's" well known specific for the treatment of gonorrhœa. *Dose*, twenty to thirty minims, in a little milk or sugared water.

Tincture of Ginger.

Tinctura Zingiberis.

Ginger sliced two ounces and a half, rectified spirit two pints; prepare by percolation.

Use.—Cordial, stimulant. *Dose*, one fluid drachm to two drachms in water; much used in flatulent colic and in gout, also to prevent the griping of purgative medicines.

Tincture of Hemp.

Gunjah tops two pounds, rectified spirit one gallon. Macerate for two days, then boil for twenty minutes in a distilling apparatus, strain while hot.

Use.—Narcotic, stimulant and anti-convulsive, given in cholera, delirium tremens, tetanus and other convulsive diseases, also in neuralgia, in tic doloroux, &c. *Dose*, twenty minims and upwards, according to the symptoms, administered in syrup.

Tincture of Hermodactyl.

Hermodactyl (*soorinjan tulk*) powdered five ounces, proof spirit two pints; prepare as above.

Use and *Dose.*—The same as of the colchicum tincture, for which on emergency this may be substituted.

Tincture of Hemlock.

Hemlock leaves dried and powdered five ounces, cardamoms, bruised, one ounce, proof spirit two pints; prepare by percolation or agitation.

Use.—Narcotic. *Dose*, half a fluid drachm to one drachm.

Tincture of Hops.

Tinct. Lupuli.

Hops six ounces, proof spirit two pints, boil with half the spirit for ten minutes, agitate with the remainder, and strain when cool.

Use.—Bitter tonic, reported to be sedative, but on insufficient evidence. *Dose*, half a fluid drachm to two drachms.

Tincture of Hyosciamus.

Henbane leaves dried, five ounces, proof spirit two pints. Boil with half the spirit for ten minutes, strain when cold, and add the rest of the spirit.

Use.—A very effectual narcotic, less exciting or constipating than the tincture of opium. *Dose*, half a fluid drachm to two drachms.

Compound Tincture of Iodine.

Iodine one ounce, iodide of potassium two ounces, rectified spirit two pints. Dissolve.

Use.—(See Iodide of Potassium.)

Tincture of Jalap.

Jalap bruised ten ounces, proof spirit two pints, prepare by percolation, or boil in half the spirit for twenty minutes, replacing what may be lost by evaporation; strain and mix the rest of the spirit with the strained liquor.

Use.—Cathartic. *Dose*, one fluid drachm to two drachms.

Tincture of Kaladana.

Kaladana seed bruised eight ounces, proof spirit two pints, treat as above.

Use and *dose* the same as last article.

Compound Tincture of Kreat.

Kreat root six ounces, myrrh and aloes each one ounce, French Brandy two pints, macerate for three days and strain.

Use.—This is equivalent to the celebrated "*drogue amere.*" Its effects are tonic, stimulant, and gently aperient. It is a valuable preparation in the treatment of several forms of dyspepsia and torpidity of the alimentary canal. *Dose*, one fluid drachm to half an ounce.

Tincture of Kino.

Kino bruised three ounces and a half, rectified spirit two pints, treat as above.

Use.—Astringent. *Dose*, one to two fluid drachms.

Tincture of Palass Kino.

Prepare as above. *Dose* and *use* the same.

Compound Tincture of Lavender.

Spirit of lavender one pint and a half, of rosemary half a pint, cinnamon bruised and nutmeg bruised each two drachms and a half, red sanders wood sliced five drachms; agitate well at intervals for a day, and strain.

Use.—Stimulant, employed to colour the arsenical solution.

Tincture of Myrrh.

Myrrh bruised three ounces, rectified spirit two pints, prepare by percolation, or triturate the myrrh and agitate in a stoppered bottle with half the spirit and an ounce of powdered glass. Repeat this at intervals during a day, next day strain.

Use.—Tonic. *Dose*, one to two fluid drachms, much used, diluted with water, as an application to sore gums.

Tincture of Googul.

Prepare as above.

Use and *dose*, the same as the tincture of myrrh.

Tincture of Mugrela.

Mugrela seeds ground four ounces and a half, proof spirit two pints, prepare by percolation.

Use.—Stimulant and diaphoretic, recommended by native practitioners to promote the secretion of milk. *Dose*, half a fluid drachm to two drachms.

Tincture of Opium.

Best Bengal opium powdered four ounces, proof spirit two pints. Rub by the hand with one-fourth the spirit for ten minutes, or till thoroughly broken into pulp; add the

rest of the spirit, agitate for half an hour in a stoppered vessel, after settling decant, and press the residue through cloth.

This tincture is of deep brown-red colour. Twenty minims are equal to one grain of solid opium. We recommend a larger proportion of opium than the London College by one-fourth, as we employ opium which contains less morphia than the Turkey kind used in the London process.

Tincture of opium or laudanum is decomposed by water, the alkalies and alkaline carbonates, solutions of lead and many other metallic salts, also by tincture of galls.

Use.—An invaluable stimulant and narcotic; the dose, according to circumstances, varies from ten minims to a fluid drachm.

Ammoniacal Tincture of Opium.

(Commonly called *Scotch Paregoric.*)

Benzoic acid and saffron finely dried each two drachms, opium sliced two drachms, oil of anise half a drachm, spirit of ammonia eight fluid ounces, rectified spirit two fluid ounces. Triturate the opium with two ounces of spirit and pour the pulpy mixture into the bottle containing the other ingredients, agitate well for fifteen minutes and strain.

Use.—Diaphoretic and sedative, much used in irritating coughs and asthmatic affections; eighty minims are equal to one grain of opium. *Dose*, half a drachm and upwards.

Camphorated Tincture of Opium.

(Commonly called *English Paregoric.*)

Camphor fifty grains, opium sliced eighty grains, benzoic acid seventy-two grains, oil of anise one fluid drachm, proof spirit two pints; digest for three days and filter.

Use.—Diaphoretic and sedative. *Dose*, one to four fluid drachms; four drachms are equivalent to one grain of opium.

Ætherial Tincture of Opium.

Tincture of opium, spirits of sulphuric ether and aromatic spirit of ammonia each one fluid ounce. Mix.

Use.—This is one of the "cholera tinctures," recommended by the Medical Board. *Dose*, two tea-spoonsful repeated every half hour till the symptoms abate, given in half a wine glass full of what is termed the "cholera mixture."

This is composed of tincture of calumba four ounces, wine of aloes and spirits of caraway each one ounce, and peppermint water twelve ounces.

Tincture of Orange Peel.

Tinct. Aurantii.

Dried orange peel three ounces and a half, proof spirit two pints, macerate for three days and strain, or beat into a pulp with a little spirit, and then follow the percolative process.

Use.—Cordial, stimulant, chiefly given with other remedies, such as bitters, to cover their unpleasant flavour.

Tincture of Quassia.

Quassia chips ten drachms, proof spirit two pints; boil in half the spirit for fifteen minutes, strain and add the remainder of the spirit.

Use.—Bitter tonic. *Dose*, one to two fluid drachms.

Compound Tincture of Rhubarb.

Tinctura Rhei Composita.

Rhubarb sliced two ounces and a half, liquorice bruised six drachms, ginger sliced and saffron each three drachms, proof spirit two pints. Boil the rhubarb, ginger and liquorice with one pint of the spirit for fifteen minutes, replacing what is lost; agitate the saffron with the rest of the spirit occasionally for an hour, strain and mix the liquor.

Tincture of Squill.

Squill sliced and powdered five ounces, proof spirit two pints; boil in half the spirit for ten minutes, strain, mix the liquor with the remainder.

Use.—Diuretic, expectorant. *Dose*, ten to thirty minims.

Compound Tincture of Senna.

Senna three ounces and a half, caraway bruised three drachms, cardamoms bruised one drachm, *raisins*, five ounces, proof spirit two pints. For *raisins*, sugar may be substituted, two ounces being employed. Boil the senna with eight ounces of the spirit, agitate the bruised caraway and cardamoms with the remainder. On cooling, strain both liquors and mix.

Use.—Cordial and purgative. *Dose*, two fluid drachms to one ounce.

Tincture of Serpentary.

Serpentary bruised three ounces and a half, proof spirit two pints. Boil in half the spirit for ten minutes, strain, and add the rest of the spirit.

Use.—Tonic and diaphoretic. *Dose*, one to three fluid drachms.

Tincture of Toddalia.

Toddalia (inner bark of root) powdered coarsely, eight ounces, proof spirit two pints; prepare by percolation.

Use.—A powerful stimulant and diaphoretic, also considered tonic and febrifuge. *Dose*, one to three fluid drachms. This bark is a native remedy of high repute in the treatment of the collapse from jungle fever.

Tincture of Valerian.

Valerian root bruised and powdered five ounces, proof spirit two pints; prepare by agitation.

Use.—Stimulant, antispasmodic, chiefly used in chlorosis and hysteria. *Dose*, one to two fluid drachms.

Tincture of Jatamansi Valerian.

Jatamansi valerian five ounces, proof spirit two pints; prepare as above.

Use and *dose*, the same as of the last article. The roots employed must be recent, and of the best quality.

Compound Tincture of Valerian.

Valerian bruised five ounces, aromatic spirit of ammonia one pint, proof spirit one pint; agitate the valerian briskly with the spirit for twenty minutes, strain, and add the aromatic spirit of ammonia.

Use.—The same as of the simple tincture, but a more powerful stimulant. *Dose*, half a fluid drachm to one drachm. It should not be given with acids or metallic salts.

TROCHES, OR LOZENGES.

Lozenges of Gum Arabic.

Gum arabic four ounces, arrow root one ounce, white sugar one pound. Mix and powder, and with rose water beat into a mass, to be divided into lozenges, and dried over the water bath, or by exposure to the sun in the hot season.

Hibiscus Lozenges.

Arrow root one ounce, white sugar one pound, hibiscus mucilage concentrated to one-third, and strained, as much as required to form a mass, to be divided into lozenges and dried.

Use.—A good demulcent in irritating coughs.

Chalk Lozenges.

Prepared chalk four ounces, gum arabic one ounce, nutmeg powdered one drachm, white sugar six ounces. Powder and make into a mass with water, dry over the water bath.

Use.—Antacid; a useful lozenge to persons liable to heart burn.

Liquorice Lozenges.

Extract of liquorice (*a*) gum arabic, each six ounces, pure sugar one pound. Dissolve in boiling water, and concentrate to a proper consistence.

(*a*) Or of goonch.

Use.—Demulcent in irritating coughs.

Magnesia Lozenges.

Carbonate of magnesia six ounces, sugar three ounces, nutmeg one scruple. Pulverize and with tragacanth mucilage make into lozenges.

Use.—Antacid, like the chalk lozenges.

The Edinburgh College give formulæ for lozenges of muriate of morphia, ipecacuanha, and opium, but the dangerous mistakes to which children are exposed by the form of these preparations prevent our inserting them.

VINEGARS.

Aromatic Vinegar.

Acetum Aromaticum.

Rosemary, marjoram, lavender, each dried one ounce, cloves bruised a drachm and a half, acetic acid one pint and a half. Macerate for three days and filter the liquor.

Use.—As a stimulating perfume.

Camphorated Vinegar.

Camphor half an ounce, acetic acid six and a half fluid ounces. Powder the camphor with a little spirit and dissolve in the acid.

Use.—A stimulating perfume, and a counter-irritant application for external use.

Vinegar of Cantharides.

Cantharides powdered two ounces, acetic acid one pint. Percolate frequently for a day.

Use.—An excellent liquid blister, being rubbed on the skin with a feather.

Vinegar of Telini.

Preparation and use as above,—but more active.

Vinegar of Colchicum.

Colchicum bulb fresh and sliced one ounce, distilled vinegar sixteen fluid ounces, proof spirit one fluid ounce. Macerate for three days, press, strain, and add the spirit.

Use.—Given in gout and rheumatism; effect diuretic and anodyne, often cathartic. *Dose*, half a fluid drachm to one drachm.

In the same manner, and for the same purpose, prepare the *Vinegar of the Hermodactyl.*

Vinegar of Squill.

Squills recently dried fifteen ounces, distilled vinegar six pints, proof spirit half a pint. Infuse the squill in the vinegar in a stoppered bottle for a day, agitating frequently, press, allow the liquor to settle, decant, and add the spirit to the clear liquor.

Use.—Expectorant and diuretic. *Dose*, half a fluid drachm to two drachms, usually given in peppermint water.

WINES.

Vina.

Solutions of medicinal substances in Sherry wine.

Wine of Aloes.

Aloes powdered two ounces, canella powdered four drachms, sherry two pints. Powdered cinnamon may be

substituted for the canella, when this cannot be conveniently procured. Triturate the aloes with half a pint of the sherry, mix the ingredients into a pulp, and prepare by percolation.

Use.—Aperient and cordial. *Dose*, one to two fluid drachms.

Wine of Colchicum.

Dried colchicum powdered eight ounces, sherry two pints. Prepare by percolation.

(See Vinegar of Colchicum.)

Use.—Narcotic and diuretic, given chiefly in gout and rheumatism. *Dose*, thirty minims to one fluid drachm.

Wine of Ipecacuanha.

Ipecacuanha bruised and powdered two ounces and a half, sherry two pints. Prepare by percolation, or by maceration for seven days.

Use.—Diaphoretic and emetic. It is of great value in the treatment of many of the diseases of infants and young children, its operation being mild, speedy and certain. *Dose*, a tea spoonful or half a fluid drachm, repeated every quarter of an hour till full vomiting is induced.

The active principle of this root is called *Emetine*, which the root contains in the proportion of about 14 per 100.

Wine of Chiretta.

Chiretta in coarse powder half an ounce, Peruvian bark ditto one ounce, orange peel dried two drachms, cinnamon powdered one drachm, proof spirit four and a half fluid ounces, sherry thirty-six fluid ounces. Boil the powdered barks in the spirit for ten minutes, replacing what may be lost by the boiling, strain and press, mix the liquor with the sherry, and let the whole stand with the orange peel and

cinnamon a day, agitating frequently. Strain and press, and filter the liquors.

Use.—Cordial, bitter and tonic. *Dose,* two fluid drachms.

Wine of Opium.

Watery extract of opium two ounces and a half, cinnamon powdered, cloves powdered each two drachms and a half, sherry wine two pints. Reduce the opium to a pulp by the hand with half a pint of the sherry gradually added. Then triturate the more solid matter with the cinnamon and cloves, and place the pulp in the percolator; pass through this the rest of the sherry.

Use.—This is "*Sydenham's laudanum,*" it is a much more agreeable and certain preparation than the ordinary tincture of opium. *Dose,* ten minims to a fluid drachm.

Wine of Rhubarb.

Rhubarb in coarse powder two ounces, canella one drachm, proof spirit two fluid ounces and a half, sherry sixteen fluid ounces and a half. An equal weight of cinnamon may be used instead of the canella.

Prepare by percolation, or maceration and agitation for two days.
Use.—The same as that of the tincture of rhubarb. *Dose,* one to two fluid drachms.

APPENDIX.

APPENDIX.

Specific Gravity of Alcohol and Spirits.—Use of the Hydrometer.

The apothecary should bear in mind carefully, that the density of spirit changes in an important degree with changes of temperature: thus a spirit which at 85° Fahrt. is of the density of 833, at 60° Fahrt. has that of 845. The table we have given at page 250, affords the means of ascertaining the density at 60°. The following table taken from Dr. Christison's Dispensatory, shews how to convert the density into the usual Hydrometer expression of *above* or *below* Proof.

There are several Hydrometers in popular use. The best is that of "Sykes," which is accompanied by copious tables and instructions for its use.

Density.	Spir. 825 by wt.	Baumé.	Dicas & Sykes.	G. Lus. by vol.	Density.	Spir. 825 by wt.	Baumé.	Dicas & Sykes.	G. Luss. by vol.
795	...	47.7	...	100	820	...	42.0	...	...
796	...	...	...	...	822	...	...	...	94
798	...	47.0	...	...	824	...	41.2	...	...
800	...	...	...	99	825	1000	41.0	63	...
802	...	46.0	...	...	826	993	...	62	93
805	...	...	...	98	828	984	...	61	92.3
806	...	45.2	...	...	830	975	39.9	60	91.7
808	...	...	...	...	832	966	...	59	91
810	...	44.2	...	97	834	957	39.0	58	90.3
812	...	...	...	...	836	949	...	57	89.7
814	...	...	...	96	838	940	...	56	89
816	...	42.9	...	...	840	932	37.8	55	88.5
818	...	...	...	95	842	924	...	54	88.8

Density.	Spir. 825 by wt.	Baumé.	Dicas & Sykes.	G. Lus. by vol.	Density.	Spir. 825 by wt.	Baumé.	Dicas & Sykes.	G. Luss. by vol.
844	916	37.0	53	87.3	922	540	...	— 2	57
846	908	...	52	86.7	924	531	22.0	— 4	56
848	898	36.2	50	86	926	521	...	— 6	55
850	888	...	49	85.3	928	510	...	— 7	54
852	878	...	48	84.7	930	500	21.0	— 9	53
854	868	35.0	47	84	932	489	...	—11	52
856	857	...	46	83.3	934	479	...	—13	51
858	849	34.2	45	82.7	936	468	20.0	—15	50
860	840	...	45	82	938	456	...	—17	49
862	833	...	44	81.3	940	444	...	—19	48
864	823	33.0	43	80.3	942	432	19.0	—21	46.5
866	813	...	42	79.6	944	421	...	—23	45.5
868	807	31.2	40	79	946	411	...	—24	44
870	798	...	39	78.3	948	397	18.0	—26	43
872	787	...	38	77.7	650	382	...	—28	41.5
874	776	31.0	36	77	952	370	...	—31	40.5
876	768	...	34	76	954	358	17.0	—34	39
878	757	...	32	75.3	956	346	...	—36	38
880	746	30.1	30	74.3	958	333	...	—39	36.5
882	738	...	29	73.7	960	315	16.1	—42	35
884	729	29.1	28	73	962	300	...	—45	34
886	719	...	27	72	964	285	...	—48	32
888	709	...	25	71	966	270	15.1	—51	30
890	699	28.0	24	70.3	968	253	...	—54	28
892	689	...	22	69.3	970	236	...	—57	26
894	680	...	20	68.7	972	218	...	—60	24
896	671	27.0	19	68	974	200	13.9	—64	22
898	662	...	17	67.3	976	...	...	...	20
900	649	26.2	15	66.7	978	175	...	—72	18
902	641	...	14	66	980	150	13.0	—75	16
904	631	...	12	65	982	135	...	—77	14
906	621	25.1	11	64	984	120	...	—80	12
908	612	...	10	63.3	986	105	12.1	—82	10.5
910	602	...	8	62.3	988	90	...	—85	9
912	591	24.1	7	61.5	990	75	...	—89	7
914	581	...	5	60.5	992	60	11.2	—92	6
916	571	23.0	3	59.6	994	45	...	—95	4
918	562	...	1	59	996	30	...	—96	3
920	550	...	0	58	998	15	...	—98	1

PRICE OF DRUGS.

The annexed list affords the bazar prices of some of the most important drugs in the Calcutta market. No fixed price can be assigned to the articles which are only retailed in small quantities.

	Rs.	As.		Rs.	As.
Alum, China, per maund, ...	2	12	to	0	0
Asafœtida, (Mass,) per b. md.	12	0	to	15	0
,, (Seer,) ,, ...	20	0	to	25	0
Borax, E. I., refined, ,, ...	17	0	to	18	0
Catechu, Pegu choc, ,, ...	5	4	to	5	8
,, Country, dark, ,, ...	3	2	to	4	0
Castor Oil, fine, ,, ...	16	0	to	18	0
,, filtered, ,, ...	20	0	to	0	0
Ginger, Rungpore, ,, ...	4	0	to	4	4
Galls, Persian, ,, ...	25	0	to	28	0
Nutmegs, fine, per seer, ...	3	12	to	4	0
Nux Vomica, per b. md.	1	4	to	0	0
Sal Ammoniac, ,, ...	14	8	to	15	0
Senna, Gulf, ,, ...	6	0	to	6	8
Cardamoms, (small Malabar,) per b. seer, ...	2	8	to	2	12
Chiretta, per b. md.	6	0	to	6	8
Cubebs, per f. md. Co's. rs.	14	8	to	15	0
Gum Arabic, fine, per b. md.	16	0	to	18	0
,, Benjamin, per f. md. Co's. rs...	25	0	to	55	0
,, Gamboge, ,, ,, ...	85	0	to	90	0
Bees' Wax, yellow, per b. md.	32	0	to	34	0
,, white, ,, ...	40	0	to	42	0
Almonds, (shell,) ,, ...	4	8	to	5	0
Cloves, Penang, per f. seer, ...	0	15	to	1	0
Cajeputi Oil, per bottle, ...	5	0	to	0	0
Camphor, China, per f. md. Co's. rs.	48	0	to	50	0
Long Pepper, ,, ,, ...	11	0	to	12	0
Saltpetre, f. k. bd. &c. refd.	5	2	to	6	4

HYPOTHETICAL OPINIONS AS TO THE NATURE OF AMMONIACAL SALTS.

" In mentioning the salt formerly called sal-ammoniac, afterwards muriate of ammonia, and more recently hydrochlorate of ammonia, I considered it, as the last-mentioned name imports, as a compound of hydrochloric acid and ammonia, in which neither the acid nor the alkali undergoes decomposition. It has, however, been supposed by Berzelius when these substances act upon each other, that hydrogen is transferred from the hydrochloric acid to the ammonia, and consequently that the salt, which considered as hydrochlorate of ammonia would be written NH^3, HCl, becomes NH^4, Cl, in which NH^4 represents *ammonium*, an hypothetical compound, possessing to a certain extent the properties of a metal, and this combining with the chlorine deprived of hydrogen, becomes *chloride of ammonium*.

When on the contrary, an oxacid, as sulphuric acid, is added to a solution of ammonia, this hypothesis supposes that an equivalent of water suffers decomposition; so that the salt usually called sulphate of ammonia, NH^3, SO^3, HO, becomes *sulphate of oxide of ammonium*, or NH^4, O, SO^3: in this case the ammonia becomes ammonium by combining with the hydrogen of the decomposed water, and this is simultaneously converted into oxide by uniting with its oxygen; and being thus analogous to a metal combined with oxygen, it has acquired the condition requisite to its combination with an acid, and consequently unites like a metallic oxide with the sulphuric acid, as above-mentioned, forming the sulphate of oxide of ammonium.

Professor Graham appears to adopt the above-described hypothesis, regarding sal-ammoniac as chloride of ammonium, and sulphate of ammonia a sulphate of oxide of ammonium; but in the case of the sulphates of metallic oxides, he seems to favour the opinion, that the oxygen of the base is transferred to the acid; so that while the oxide is reduced to the metallic state, the sulphuric acid becomes, by the addition of the oxygen, a compound represented by SO^4, for which Professor Graham proposes the name of *sulphatoxygen*, and that of *sulphatoxide*, to express a compound of it and a metal; so that on the "old view" that which was called *sulphate of soda*, is on the "new view" *sulphatoxide of sodium*, or Na, SO^4, instead of, as formerly, NaO, SO^3.

Professor Daniell, grounding his opinion on the results of electrical decompositions, has also offered an explanation of the constitution of

some ammoniacal and other salts. With respect to sal-ammoniac, he admits the views of Berzelius, that it is a chloride of ammoniun; or, adopting his words, this salt is an "electrolyte whose simple anion is chlorine, and compound cathion nitrogen with 4 equivalents of hydrogen." With respect to the salt obtained by the action of hydrated sulphuric acid upon ammonia, he considers it, as Professor Graham does, a sulphate of a metallic oxide, as a compound, in which all the oxygen is combined with the sulphur, forming a substance whose symbol is SO^4, combined with ammonium NH^4; and this salt, usually termed hydrated sulphate of ammonia, Professor Daniell describes as an *oxysulphion of ammonium*, and the sulphates of metallic oxides he regards as oxysulphions of their respective metals.

Dr. Kane, on the other hand, considers that ammonia, instead of acquiring an equivalent of hydrogen to become *ammonium*, loses one to form *amidogene*, represented by NH^2; and he regards sal-ammoniac neither as hydrochlorate of ammonia nor chloride of ammonium, but as a *chloro-amidide of hydrogen*: NH^2, H (=ammonia) represents *amidide of hydrogen*, and this combined with *chloride of hydrogen*, HCl (=hydrochloric acid) yields NH^2, H, HCl, *chloramidide of hydrogen* (=NH^3, HCl, hydrochlorate of ammonia). The nature of the salts formed by the action of oxacids upon ammonia, corresponding to this view of the action of hydracids, is this: taking sulphuric acid as an example, when this acid acts upon ammonia, there results neither sulphate of ammonia nor sulphate of oxide of ammonium, but *sulphate of amidide of hydrogen*, NH^2, H, SO^3. This may be considered as a type of the compounds resulting from the action of oxacids upon ammonia, on Dr. Kane's hypothesis.

It has been supposed that the hypotheses above described offer a more simple and philosophical explanation of the action of acids on metals and of the nature of the resulting compounds, than those hitherto adopted. As, however, neither ammonium, oxide of ammonium, amidogene, nor sulphatoxygen has ever been isolated, it is correctly observed by Professor Graham, that to whichsoever of the hypotheses "we give preference, we can scarcely avoid using the language of the old theory in the present state of chemical science."—*From Phillips's translation of the Pharmacopœia, Londinensis*, 1841.

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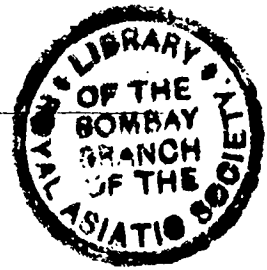

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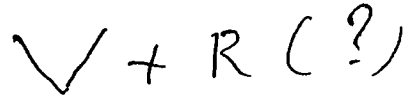

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